

PROCEEDINGS  
OF THE  
CALIFORNIA ACADEMY OF SCIENCES  
FOURTH SERIES

VOL. XI, No. 20 AND 21, pp. 603-653,

AUGUST 21, 1922.

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XX

Report of the President of the Academy  
for the Year 1921

BY  
C. E. GRUNSKY  
*President of the Academy*

XXI

Report of the Director of the Museum  
for the Year 1921

BY  
BARTON WARREN EVERMANN  
*Director of the Museum*

SAN FRANCISCO  
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1922

## PROCEEDINGS

### Fourth Series

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**XX**

**REPORT OF THE PRESIDENT OF THE ACADEMY  
FOR THE YEAR 1921**

By C. E. GRUNSKY  
*President of the Academy*

The activities of the California Academy of Sciences during the year 1921 have resulted in some notable achievements, as will appear from the reports of your officers about to be presented.

There has been an increase of 65 in membership which is now close to the 1000 mark. New members to the number of 110 were admitted. The loss by death was 28; by resignation, 14; and dropped for arrearages, 3. At the beginning of the year the members numbered 927; on January first, 1922, they numbered 992.

The present membership is made up of:

Patrons .....	12
Honorary Members .....	25
Life Members .....	83
Fellows .....	24
Members .....	848
Total .....	992

The Academy carries on its list of Patrons the following names:

*Living*

William B. Bourn	A. Kingsley Macomber
William H. Crocker	John W. Mailliard
Peter F. Dunne	Joseph Mailliard
Barton Warren Evermann	M. Hall McAllister
Herbert Fleishhacker	Ogden Mills
Joseph D. Grant	William C. Van Antwerp



*Deceased*

William Alvord	James Lick
Charles Crocker	Alexander F. Morrison
John W. Hendrie	Amariah Pierce
Mrs. Charlotte Hosmer	Ignatz Steinhart

Those who were called by death during 1921 are as follows:

Dr. J. A. Allen.....	Honorary.....	August 29, 1921
Mr. James Baumberger.....	Member.....	November 21, 1921
Prof. Charles B. Cory.....	Honorary.....	July 29, 1921
Mrs. Nelly Waterhouse Dorne.....	Member.....	March 25, 1921
Mr. Alex. Goldstein.....	Member.....	April 5, 1921
Mr. Howard C. Holmes.....	Member.....	October 31, 1921
Mr. C. Frederick Kohl.....	Life Member.....	November 23, 1921
Mr. John Lederer.....	Member.....	November 24, 1921
Mr. A. F. Morrison.....	Patron.....	November 13, 1921
Mr. Henry Payot.....	Life Member.....	November 21, 1921
Mr. Harry L. Roff.....	Member.....	February 3, 1921
Mrs. Sidney Smith.....	Member.....	November 3, 1921
Mr. Donald F. Tillinghast.....	Member.....	December 11, 1921
Mr. George D. Toy.....	Member.....	January, 1921
Mr. Louis Weimann.....	Member.....	April 25, 1921
Mr. Vinoy Westfall.....	Member.....	March 8, 1921
Mr. John E. Williams.....	Member.....	1921
Mr. Thomas S. Wilson.....	Member.....	December 26, 1921

The Academy has published during 1921 the following papers in continuation of the Fourth Series of the Proceedings:

- Vol. X, No. 11, pp. 119-127—REPORT OF THE PRESIDENT OF THE ACADEMY FOR THE YEAR 1920, by C. E. Grunsky.
- Vol. X, No. 12, pp. 128-163—REPORT OF THE DIRECTOR OF THE MUSEUM FOR THE YEAR 1920, by Barton Warren Evermann.
- Vol. XI, No. 1, pp. 1-26—NOTES ON A FAUNA OF THE VIGO GROUP AND ITS BEARING ON THE EVOLUTION OF MARINE MOLLUSCAN FAUNAS, by Roy E. Dickerson.
- Vol. XI, No. 2, pp. 27-38—A LIST OF THE AMPHIBIANS AND REPTILES OF NEVADA, WITH NOTES ON THE SPECIES IN THE COLLECTION OF THE ACADEMY, by John Van Denburgh and Joseph R. Slevin.
- Vol. XI, No. 3, pp. 39-47—A LIST OF THE AMPHIBIANS AND REPTILES OF IDAHO, WITH NOTES ON THE SPECIES IN THE COLLECTION OF THE ACADEMY, by John Van Denburgh and Joseph R. Slevin.
- Vol. XI, No. 4, pp. 49-72—A LIST OF THE AMPHIBIANS AND REPTILES OF THE PENINSULA OF LOWER CALIFORNIA, WITH NOTES ON THE SPECIES IN THE COLLECTION OF THE ACADEMY, by John Van Denburgh and Joseph R. Slevin.
- Vol. XI, No. 5, pp. 73-94—NOTES ON THE BIRDS AND MAMMALS OF SISKIYOU CO., CALIFORNIA, by Joseph Mailliard.
- Vol. XI, No. 6, pp. 95-98—PRELIMINARY DIAGNOSES OF NEW SPECIES OF REPTILES FROM ISLANDS IN THE GULF OF CALIFORNIA, MEXICO, by John Van Denburgh and Joseph R. Slevin.
- Vol. XI, No. 7, pp. 99-102—NEW CALIFORNIAN SPIDERS, by Nathan Banks.
- Vol. XI, No. 8, pp. 103-107—UNDESCRIBED TIPULIDÆ (DIPTERA) FROM WESTERN NORTH AMERICA, PART II, by Charles P. Alexander.
- Vol. XI, No. 9, pp. 109-110—DESCRIPTION OF A NEW SPECIES OF PERO FROM CALIFORNIA, by W. S. Wright.

- Vol. XI, No. 10, pp. 111-134—CHARACTERS OF SOME NEW SPECIES OF NORTH AMERICAN HEMIPTEROUS INSECTS, WITH ONE NEW GENUS, by Edward P. Van Duzee.
- Vol. XI, No. 11, pp. 135-136—OUR NORTH AMERICAN SPECIES OF STRONGYLOCORIS (HEMIPTERA), by Edward P. Van Duzee.
- Vol. XI, No. 12, pp. 137-144—CHARACTERS OF EIGHT NEW SPECIES OF NORTH AMERICAN ANTHOCORIDÆ OR FLOWER BUGS, by Edward P. Van Duzee.
- Vol. XI, No. 13, pp. 145-152—A STUDY OF NORTH AMERICAN GRASS BUGS OF THE GENUS IRBISIA, by Edward P. Van Duzee.
- Vol. XI, No. 14, pp. 153-195—INSECTS OF THE PRIBILOF ISLANDS, ALASKA: INTRODUCTION, by G. Dallas Hanna; COLEOPTERA, by Edwin C. Van Dyke; HYDROPHORUS FUMIPENNIS, by M. C. Van Duzee; DIPTERA (GENERAL REPORT), by F. R. Cole; ANTHOMYIIDÆ, by J. R. Malloch; TIPULIDÆ, by C. P. Alexander; HYMENOPTERA (BREMIDÆ), by Theodore H. Frison; HYMENOPTERA (SAW-FLIES), by Alexander D. MacGillivray; and ORTHOPTERA, NEUROPTERA, HEMIPTERA AND LEPIDOPTERA, by E. P. Van Duzee.
- Vol. XI, No. 15, pp. 197-344—AN ANNOTATED LIST OF THE DIPTERA (FLIES) OF OREGON, by F. R. Cole and A. L. Lovett.
- Vol. XI, No. 16, pp. 345-393—REVISION OF THE PIPIZA GROUP OF THE FAMILY SYRPHIDÆ (FLOWER-FLIES) FROM NORTH OF MEXICO, by C. Howard Curran.
- Vol. XI, No. 17, pp. 395-398—PRELIMINARY DIAGNOSES OF MORE NEW SPECIES OF REPTILES FROM ISLANDS IN THE GULF OF CALIFORNIA, MEXICO, by John Van Denburgh and Joseph R. Slevin.

During the year 1921 eleven free lectures were delivered at the stated meetings of the Academy, as follows:

- JANUARY 5. Vanishing Wild Life in California—Cause and Remedy, by Mr. E. R. Zion, Efficiency Expert, Civil Service Commission, San Francisco, Calif.
- MARCH 2. Experiences in the Gulf of California, by Mr. Rufus A. Coleman, United States Bureau of Fisheries, San Francisco, Calif.
- APRIL 6. Erosion in California in Relation to Forestry, by Mr. E. N. Munns, Forest Examiner, United States Forest Service, San Francisco, Calif.
- MAY 4. The Relation of Pacific Coast Rainfall to the World System of Rain Belts, by Dr. Marsden Manson, San Francisco, Calif.
- JUNE 1. Historical Sketch of the Scripps Institution and Illustrative Examples of certain researches that it has undertaken, by Dr. George F. McEwen, Oceanographer, Scripps Institution for Biological Research, La Jolla, Calif.
- JULY 6. Field Work in Del Norte County during the spring of 1921, by Mr. Jos. Mailliard, Curator of Ornithology and Mammalogy, California Academy of Sciences, San Francisco, Calif.
- AUGUST 3. Diatoms, the Jewels of the Plant World, by Dr. Albert Mann of the Carnegie Institution of Washington, Washington, D. C.
- SEPTEMBER 7. The 1921 California Academy of Sciences Expedition to the Gulf of California, by Mr. E. P. Van Duzee, Curator, Department of Entomology, California Academy of Sciences.

- OCTOBER 5. Observations on the Geology of Colombia, by Mr. F. M. Anderson, Berkeley, California.
- NOVEMBER 2. Bacterial Food Poisoning, by Dr. Ivan C. Hall, Associate Professor of Bacteriology, University of California.
- DECEMBER 7. Field Work of the Department of Ornithology and Mammalogy during 1921, by Mr. Joseph Mailliard, Curator, Department of Ornithology and Mammalogy, California Academy of Sciences, San Francisco.

The Sunday Afternoon lectures delivered in the Museum Building during 1921 have been well attended; they have included the following:

- JANUARY 2. Atoms and Ions, by Dr. E. P. Lewis, Professor of Physics, University of California, Berkeley.
- JANUARY 9. Electrons and Positive Rays, by Dr. E. P. Lewis, Professor of Physics, University of California, Berkeley.
- JANUARY 16. Radioactive Transformations, by Dr. E. P. Lewis, Professor of Physics, University of California, Berkeley.
- JANUARY 23. General Properties of X and Gamma Rays, by D. L. Webster, Professor of Physics, Stanford University, California.
- JANUARY 30. Photography of the Planets, with Special Reference to Mars, by Dr. E. C. Slipher, Lowell Observatory, Flagstaff, Ariz.
- FEBRUARY 6. X-Ray Spectra, by Dr. D. L. Webster, Professor of Physics, Stanford University, California.
- FEBRUARY 13. The Structure of Atoms, by Dr. D. L. Webster, Professor of Physics, Stanford University, California.
- FEBRUARY 20. How Uncle Sam's Money is Wasted, by Mr. Edward Berwick, Member of the Institute of International Law, Pacific Grove, Calif.
- FEBRUARY 27. The Dimensions of the Stellar Universe, by Dr. Harlow Shapely, Mount Wilson Observatory, Pasadena, Calif.
- MARCH 6. Eighteen Thousand Miles in Search of Mosquitoes in California—How and Why, by Major W. B. Herms, Associate Professor of Parasitology, University of California, Berkeley.
- MARCH 13. Parasitism among Insects, by Mr. Harry S. Smith, Entomologist, State Department of Agriculture, Sacramento, Calif.
- MARCH 20. Some Injurious Forest Insects of California, by Dr. E. C. Van Dyke, Assistant Professor of Entomology, University of California, Berkeley.
- MARCH 27. Evolution of the Ancient Orders of Insects, by Professor C. W. Woodworth, Professor of Entomology, University of California, Berkeley.
- APRIL 3. The Evolution of California Scenery, by Dr. R. S. Holway, Associate Professor of Physical Geography, University of California, Berkeley.
- APRIL 10. Ancient Seas and their Faunas, by Dr. B. L. Clark, Assistant Professor of Paleontology, University of California, Berkeley.
- APRIL 24. The Former Mammalian Life of California, by Dr. Chester Stock, Research Assistant, Department of Paleontology, University of California, Berkeley.



- MAY 1. The Relation of Pacific Coast Rainfall to the World System of Rain Belts, by Dr. Marsden Manson, San Francisco.
- MAY 8. Weather Forecasts, Ancient and Modern, by Mr. E. A. Beals, Meteorologist, United States Weather Bureau, San Francisco.
- MAY 15. Some Popular Misconceptions about California Climate, by Mr. B. M. Varney, Instructor in Geography, University of California, Berkeley.
- MAY 22. Aviation and Meteorology, by Mr. Thomas R. Reed, Meteorologist, United States Weather Bureau, San Francisco.
- MAY 29. The Science of the Sea and Applications to our Pacific Coast Waters, by Dr. George F. McEwen, Oceanographer, Scripps Institution for Biological Research, La Jolla, Calif.
- JUNE 5. Researches on the Figure of the Earth, including a definite Determination of the Oblateness, by Captain T. J. J. See, Professor of Mathematics, United States Navy, Mare Island, Calif.
- SEPTEMBER 25. Birds and Mammals of the Mount Rainier National Park, by Dr. Walter P. Taylor, Biologist, Bureau of Biological Survey, La Jolla, Calif.
- OCTOBER 2. The Flora of Mount Rainier National Park, by Miss Alice Eastwood, Curator, Department of Botany, California Academy of Sciences, San Francisco.
- OCTOBER 9. Mammals of the Yosemite National Park, by Dr. Joseph Grinnell, Director, Museum of Vertebrate Zoology, University of California, Berkeley.
- OCTOBER 16. Questions concerning distribution of life in the open Sea, by Mr. W. E. Allen, Biologist and Publicity Secretary, Scripps Institution for Biological Research, La Jolla, Calif.
- OCTOBER 23. The Next War and our Chemical Warfare Service, by Mr. Edward Berwick, Pacific Grove, Calif.
- OCTOBER 30. National Forests as Recreation Grounds, by Mr. Paul J. Fair, Constructor of Educational Material, United States Forest Service, San Francisco.
- NOVEMBER 6. The Yosemite National Park—Its History, Geology and Scenic Features, by Mr. Ansel F. Hall, Park Naturalist, Yosemite National Park, Calif.
- NOVEMBER 13. Birds of the Yosemite National Park, by Prof. Tracy I. Storer, Museum of Vertebrate Zoology, University of California, Berkeley.
- NOVEMBER 20. Nature Guiding in a National Park, by Dr. Harold C. Bryant, Economic Ornithologist, University of California, Berkeley.
- NOVEMBER 27. The Birds of the High Sierra and their Homes, by Dr. William F. Badè, President of the Sierra Club, Berkeley, Calif.
- DECEMBER 4. Yellowstone Park—Last Stand of the Old West, by Mr. Horace M. Albright, Superintendent of the Yellowstone National Park, Wyoming.
- DECEMBER 11. Some Activities in California of the Bureau of Plant Industry, United States Department of Agriculture, by Mr. G. P. Rixford, Physiologist, Bureau of Plant Industry, United States Department of Agriculture, San Francisco.
- DECEMBER 18. The Hawaii National Park, by Mr. Will J. Cooper, Agent, Hawaii Tourist Bureau, San Francisco.

The Academy during this year curtailed its general activities to some extent in order to make possible an expedition into the Gulf of California where collections were made for the various departments. The results of this expedition are fully covered in the report of the Director of the Museum and in the reports of the Academy's curators, and nothing remains to be said about it except that it was eminently successful and has added materially to our knowledge of the fauna and flora of a region that has long waited for thorough scientific exploration. The Academy sincerely appreciates the sacrifices of those who went on the expedition and is thankful for the sustained effort of each, which was essential for its success.

It can now be announced that plans for the Steinhart Aquarium have been approved by the City and Park authorities as also by the executors of the estate of the late Ignatz Steinhart, and that bids for the construction thereof have been called for. It is hoped that contracts for its construction can be entered into soon after March first. The apparent delay in entering upon construction will prove of benefit to the enterprise in two ways: first, because interest has been accumulating and more money is therefore available than named in the bequest; and second, because the cost of building is now considerably less than it was several years ago. A year from now the Academy will be asking the City to make provision for operation.

The financial standing of the Academy is set forth in the Treasurer's report. There have been no unusual sources of income. Our regular income from rents and dues and sales of publications and the like has been about \$77,000.

Among the receipts and expenditures of special note attention may be called to the following:

The Gulf of California Expedition sailed from San Francisco on April 2, 1921, chartered the schooner "Silver Gate" at Guaymas, and spent three months in exploring the islands and shores of the Gulf. The total expense of this expedition was \$8,515.22.

The purchase of the Albert Prager Herbarium which has been added to the collection of the Botanical Department dur-



ing the year at a total expense of \$1,266.53, was made possible by the following donations:

Wm. C. Van Antwerp.....	\$120	A. F. Morrison.....	\$200
Wm. M. Fitzhugh.....	200	Wm. F. Herrin.....	200
J. D. Grant.....	100	Wm. H. Crocker.....	200
John C. Augsbury.....	100		

The following have been added to the list of Life Members of the Academy:

Adolph B. Spreckels.....	\$100	Albert Meyer.....	\$250
Mrs. Anna J. Kaseberg.....	100	Edward Jesurum.....	100
Irving Miller.....	100		

The mortgage indebtedness of the Academy which was originally \$300,000, has been again reduced during the year by a payment of \$10,000. This leaves an unpaid balance of \$280,000.

Further contributions during the year toward the cost of the game paddocks in the Yosemite Valley have been received to the amount of \$250. A balance of \$286.11 remains yet to be collected for which Mr. M. Hall McAllister has kindly undertaken to be responsible.

The Grizzly Bear habitat group, which, as noted heretofore, has been made possible by a donation of \$5,000 by Mr. Ogden Mills is nearing completion. This fills the last of the large alcoves available for such exhibits. Special attention will now be given to completing the installation of the habitat groups of small mammals and fully utilizing the remaining exhibition space.

The Academy is rapidly outgrowing the accommodations which its museum building affords. Another structure as large as the one now occupied is needed; but if dependence must be placed on the Academy resources alone it will be long before its erection can be undertaken. Here would be an excellent opportunity for some one materially to assist the Academy's educational and research work by donating funds for the building.

Aside from the work done by the Academy in its regular departments, the Academy has assisted during the year in the conservation of wild animal life. There was appointed a "Committee on the Conservation of Wild Animal Life" and this committee has had in charge the distribution of Cali-

fornia Valley Elk; the protection of the Antelope herds, of Mountain Sheep, and Roosevelt Elk; also the building of the game paddocks stocked with elk in the Yosemite Valley and the providing of an antelope refuge at Mount Dome in Siskiyou County. This last named undertaking has attracted the attention of the American Bison Society and the New York Zoological Society both of which have subscribed to the necessary fund. The committee has arranged with the United States Forest Service for the care of this herd of antelope numbering now about 100. They are now regularly fed by a paid keeper or guardian, Mr. Ash Carsley, who sends in semi-monthly reports. Outside of Yellowstone Park this, according to the committee report, is the finest, most compact, tamest, and most accessible herd of wild antelope in the West. The committee is issuing a "Distribution Map of California" which shows the location of the antelope, the elk and bighorn or mountain sheep in California. It is expected that forest rangers, game wardens, and others who have opportunity to observe will advise the committee where and when any of these animals are seen.

Death, during the year, has deprived the Academy of its legal advisor, Mr. A. F. Morrison, and since the close of the year death has taken one member from the official staff of the Academy, Mr. Rudolph J. Taussig, who has served for a number of years as Treasurer. To both of these late members the Academy is deeply indebted for valuable aid in the conduct of its affairs, and their associates keenly feel the loss which they and the Academy have sustained.

To all of those who have in any way contributed to, or assisted in, the Academy's activities, or who have helped to increase its service to the public, the officers of the Academy extend thanks. They commend, too, the good work done by the several departments which, however, will show for itself in the various reports which are about to be presented.

## XXI

REPORT OF THE DIRECTOR OF THE MUSEUM  
FOR THE YEAR 1921

By BARTON WARREN EVERMANN  
*Director of the Museum*

The annual report of the Director for the year 1920 was presented to the Academy at the annual meeting February 16, 1921. At that time the taxidermists were at work upon the Grizzly Bear Group. Shortly afterward the artist began upon the background for that group. The work of both taxidermists and artist has been progressing very slowly, but it is hoped that the group will be completed in a few days.

Owing to lack of funds necessary to secure competent preparators, very little has been done during the year upon small panel groups. It is hoped that during the coming year funds may be available to enable the Museum to prepare a considerable number of groups of this class. It is also hoped that we may be able to complete the Golden Gate Park Bird exhibit and that the exhibit of fur-bearing animals of California which we have long had in mind may be commenced.

## PERSONNEL

The personnel of the Museum remains about the same as it was one year ago. Mr. William Heim, taxidermist, who was absent on account of ill health in the early fall of 1920, returned but soon found it necessary to take still further leave.

The employees of the Academy at this date are as follows: Dr. Barton Warren Evermann, Director and Executive Curator of the Museum, Editor, and Director of the Steinhart Aquarium; W. W. Sargeant, Secretary to the Board of Trustees; Miss Susie Peers, Secretary to the Director; Joseph W. Hobson, Recording Secretary; Miss Alice Eastwood, Curator and Mrs. Kate E. Phelps, assistant, Department of Botany; Edward P. Van Duzee, Curator, F. R. Cole, Curator in Dipterology, and J. O. Martin, assistant, Department of Entomology; Dr. John Van Denburgh, Curator, and Joseph R. Slevin, assistant curator, Department of Herpetology; Dr. G.



Dallas Hanna, Curator, Dr. Roy E. Dickerson and Mr. F. M. Anderson, honorary curators, and William Barbat, temporary assistant, Department of Invertebrate Paleontology; Joseph Mailliard, Curator, Chase Littlejohn, assistant curator, and Mary E. McLellan, assistant, Department of Ornithology and Mammalogy; Dr. Walter K. Fisher, Curator, Department of Invertebrate Zoology; Edward P. Van Duzee, assistant librarian, and Mrs. Helen Van Duzee, library assistant; John I. Carlson, general assistant; Pauline Kusche, temporary general assistant; William C. Lewis, janitor; Fred Maag, carpenter and assistant janitor; George W. Edwards, assistant janitor; Frank W. Yale, assistant janitor; J. H. Kavanaugh, day-watch; Archie McCarte, nightwatch; Mrs. Johanna E. Wilkens, janitress.

#### ACCESSIONS TO THE MUSEUM AND LIBRARY

Accessions to the Museum and to the Library have been numerous and unusually valuable. A few of the more notable are mentioned in the President's report and a detailed list will be found in the appendix to this report (pp. 638-647).

#### COOPERATION WITH SCHOOLS

During the year 6,589 school children of various grades, representing 221 schools in San Francisco, accompanied by 214 teachers in charge, visited the Museum. From places outside of San Francisco there were 597 pupils representing 29 schools and accompanied by 26 teachers. Among the towns and cities outside of San Francisco that sent one or more schools to visit the Museum are Alameda, Berkeley, Hayward, Kentfield, Oakland, Piedmont, Richmond, San Mateo, and San Leandro.

The visits by schools in the year have been as follows:

##### *Schools of San Francisco:*

Total number of classes visiting.....	221
Total number of teachers in charge.....	214
Total number of students visiting.....	6589

##### *Schools outside of San Francisco:*

Total number of classes visiting.....	29
Total number of teachers in charge.....	26
Total number of students visiting.....	597

*Grand Totals:*

Total number of classes.....	250
Total number of teachers in charge.....	240
Total number of students visiting.....	7186

The Museum is glad to be of service to the public in this way and it hopes that this service may grow from year to year.

## VISITORS TO THE MUSEUM

As heretofore and in accordance with established policy, the Museum was open to the public every day in the year. The attendance by months for each year since the Museum was first opened to the public is shown in the following table:

Month—	1916	1917	1918	1919	1920	1921
January .....		23170	25260	17241	27013	25755
February .....		22058	23698	17586	23450	25679
March .....		31606	26810	27397	25419	28279
April .....		32175	23274	25994	32208	24939
May .....		26154	26391	28369	37107	25517
June .....		32123	29843	32248	36207	29406
July .....		37193	31420	48028	52492	43186
August .....		24619	31137	43730	53470	39422
September .....	16448 <sup>1</sup>	27866	29847	34007	42013	31458
October .....	36933	20629	14743 <sup>2</sup>	30463	33500	24861
November .....	27718	21810	8531 <sup>2</sup>	25246	19347	18593
December .....	15002	21693	19588	21188	21340	15062
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	96101	321096	290542	351497	403566	332157

## FIELD WORK OF THE MUSEUM STAFF

Within the past year the Museum carried on a number of field investigations, the most important being the

## EXPEDITION TO THE GULF OF CALIFORNIA

Realizing that the fauna and flora of the numerous islands in the Gulf of California were little known, it was decided to send an expedition to the Gulf early in the spring of 1921.

The "Silver Gate," a gasoline schooner, 22 tons net, 65 feet over all, capable of eight knots, with cruising radius of 2,000 miles, crew of five men, was chartered for the purpose.

<sup>1</sup> Attendance from September 22 to 30.

<sup>2</sup> Museum closed 29 days on account of the "flu."

Owing to the fact that the vessel was already in the Gulf, very satisfactory charter-terms were arranged.

The departments of the Museum represented on the expedition were: Herpetology, by Joseph R. Slevin, who was put in charge of the expedition; Entomology, by Edwin P. Van Duzee and Joseph C. Chamberlin; Botany, by Ivan M. Johnston; Ornithology and Mammalogy, by Virgil W. Owen; Paleontology, by Dr. Fred Baker.

The Mexican government sent two representatives to accompany the expedition. They were Señor Francisco Contreras, Jefe Del Museo Nacional de Historia Natural de Mexico, and Señor Carlos Lopez, of the Estudio Geologico. These gentlemen proved very agreeable additions to the personnel of the party and were very helpful in many ways, particularly in our relations with the officials of the various towns visited. The Academy feels that cooperation in scientific work by scientific men and institutions of the two countries will prove of mutual value and interest.

The expedition spent 87 days in the field (April 14 to July 9). The length of the cruise was 1,811 miles, number of localities visited, 56; number of islands visited, 36; number of collection stations, 96.

The expedition was in every way very successful, and large collections were made in most departments. In herpetology 3,200 specimens were obtained. All previously recorded species save two, were secured and at least 20 new species were discovered.

Of insects, spiders, scorpions and pseudoscorpions, about 19,275 specimens were collected. Although the specialists working up the various groups have barely begun they have already found nearly a hundred new species.

The collections in botany were very large and contain a surprisingly large number of new species. In paleontology and conchology large and important collections were secured. In birds and mammals the collections were small; very fine series of eggs of several species of birds were obtained, however, several of the species previously represented only poorly or not at all in museums. On the whole, the expedition is regarded as having been a very satisfactory one and its successful accomplishment reflects much credit not only upon



Mr. Slevin, chief of party, but upon all the representatives of the Academy and of the Mexican government.

Within the year several other parties were in the field. Dr. Hanna carried on work in Ventura County; Mr. Mailliard in Del Norte County and elsewhere in the north part of the state. These investigations are fully reported on by the respective curators in their department reports.

MEETING OF THE PACIFIC DIVISION OF THE AMERICAN  
ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE  
AND ITS AFFILIATED SOCIETIES

The 1921 meeting of the Pacific Division of the American Association for the Advancement of Science and Affiliated Societies was held at the University of California, Berkeley, August 4 to 6. The Academy was well represented in the attendance and on the programs. Not fewer than 68 members of the Academy were in attendance. Among those appearing on the programs were the following:

R. G. Aitken	D. T. MacDougal
L. L. Burlingame	F. M. MacFarland
W. W. Campbell	J. H. Moore
John N. Cobb	Willis H. Rich
Alice Eastwood	William E. Ritter
E. O. Essig	Alvin Seale
Barton W. Evermann	Edwin C. Starks
E. C. Franklin	F. B. Sumner
E. W. Gifford	S. D. Townley
Joseph Grinnell	E. P. Van Duzee
S. J. Holmes	Edwin C. Van Dyke
C. A. Kofoed	Daniel L. Webster
A. L. Kroeber	Ray Lyman Wilbur
A. O. Leuschner	W. S. Wright

USE OF THE ACADEMY'S LIBRARY AND COLLECTIONS  
BY INVESTIGATORS AND STUDENTS

As in past years, students and investigators continue to avail themselves of the facilities afforded by the Academy for study and research.

The Boy Scouts, under Scout Master Harold E. Hanson, have continued their regular Friday night meetings at the Academy throughout the year.

## PUBLICATIONS BY THE MUSEUM STAFF

The curators and other members of the Museum staff have, as heretofore, continued active in research work and have contributed numerous papers to the literature of their respective departments and other subjects. The list for 1921 is as follows:

## Evermann, Barton Warren

1. Events which have most influenced my Life. <Touchstones of Success, pp. 106-108, September, 1920.
2. Can the Alaska Salmon Fisheries be Saved? <The Scientific Monthly, Vol. XII, No. 2, February, 1921, 163-184, 12 half tones.
3. The Año Nuevo Steller Seal Lion Rookery. <Journal of Mammalogy, Vol. 2, No. 1, February, 1921, 16-19, pls. 1-3.
4. Animal Habitat Groups. <American Forestry, Vol. 27, No. 328, April, 1921, 208-215, 12 plates.
5. The Fishes of Yosemite National Park. <Handbook of Yosemite National Park, pp. 183-201, June 29, 1921.
6. Report of the Director of the Museum for the Year 1920. <Proceedings, California Academy of Sciences, Vol. X, No. 12, July 2, 1921, pp. 128-163.
7. Trout of California One of State's Important Resources. <San Francisco Chronicle, October 13, 1921.
8. Hard to distinguish between Steelhead and Rainbow Trout. <San Francisco Chronicle, October 24, 1921.
9. Ulysses Orange Cox (In Memoriam). <Proceedings of the Indiana Academy of Science for 1920, October, 1921, pp. 45-49.
10. Notes on the Birds of Carroll, Monroe, and Vigo Counties, Indiana. <Proceedings of the Indiana Academy of Science for 1920, October, 1921, pp. 315-401.
11. Thomas H. Britton. An Appreciation. <The Delphi Journal, Vol. 73, No. 7, December 1, 1921, p. 4; <The Camden Record, Vol. XLI, No. 51, December 1, 1921, p. 1; and <The Hoosier Democrat, Vol. XXV, No. 20, December 17, 1921.
12. Fur Seals off the Farallons. <Science, Vol. LIV, No. 1405, December 2, 1921, pp. 547-548.
13. An Educational Exhibit of the Birds of Golden Gate Park. <The Sierra Educational News, Vol. XVII, No. 10, December, 1921, p. 516.
14. My Cruise on a Fishing Smack. <The American Angler, Vol. VI, No. 8, December, 1921, pp. 407-412.

## Eastwood, Alice

1. Tamalpais Wild Flowers. <Trails, Vol. I, No. 2, pp. 50-54.

Hanna, G. Dallas

1. Mammals of the St. Matthew Islands, Bering Sea. <Journal of Mammalogy, Vol. I, No. 3, pp. 118-122, May, 1920.
2. Experiments in the Breeding of Cerions by Paul Bartsch. <Carnegie Institution of Washington, Vol. XIV, Publication, No. 282, 1920.  
Contained in the above work is "A comparative anatomical discussion of the five species of Cerions involved in the breeding experiments," pp. 7-13, pls. I-VI, by G. Dallas Hanna.
3. Results of Fur Seal Protection. <The Gull, Vol. III, No. 1, January, 1921.
4. *Modiolus demissus* Dillwin, in San Francisco Bay. <The Nautilus, Vol. XXXIV, No. 3, pp. 91-92, January, 1921.
5. The Pribilof Sandpiper. <The Condor, Vol. XXIII, No. 2, pp. 50-57, text figure, 13, March-April, 1921.
6. Review of "Lake Maxinkuckee: A Physical and Biological Survey," by Barton Warren Evermann and Howard Walton Clark. <The Nautilus, Vol. XXXIV, No. 4, p. 142, April, 1921.
7. New Bird Records for North America with notes on the Pribilof Island List. <The Condor, Vol. XXIII, pp. 93-95, May-June, 1921. (With Joseph Mailliard.)
8. Report of the Department of Invertebrate Paleontology for 1920. <Proceedings, California Academy of Sciences, Vol. X, p. 143, July 2, 1921.
9. Genital Organs of Hermaphroditic Fur Seals. <The American Naturalist, Vol. LV, No. 640, pp. 473-475, September-October, 1921.
10. *Epiphragmophora fidelis* (Gray) near San Francisco Bay. <The Nautilus, Vol. XXXV, No. 2, p. 34, October, 1921.
11. Frederick Morton Chamberlain. <The Nautilus, Vol. XXXV, No. 2, p. 60, October, 1921.
12. Frederick Morton Chamberlain. <Science (New Series), Vol. LIV, No. 1397, p. 323, October 7, 1921.
13. Miocene Land Shells from Oregon. <The Kansas University Science Bulletin, Vol. XIII, No. 1, October, 1921.
14. Pleistocene Mollusks from Wallace County, Kansas. <The Kansas University Science Bulletin, Vol. XIII, No. 2, October, 1921.
15. Introduction to "Insects of the Pribilof Islands." <Proceedings, California Academy of Sciences, Vol. XI, 4th Ser., No. 14, pp. 153-195, November 2, 1921.
16. Announcement of appointment of Dr. Barton W. Evermann, Director, and Mr. Alvin Seale, Superintendent, of the new Steinhart Aquarium. <Science (New Series), Vol. LIV, No. 1403, p. 489, November 18, 1921.
17. Census of Alaska Fur Seals in 1920. <Appendix VI to the Annual Report of the United States Commissioner of Fisheries for 1921, Bureau of Fisheries Document No. 909, pp. 104-121, figure 3, December, 1921.



18. Natural History Records of the Pribilof Islands. <Appendix VI to the Annual Report of the United States Commissioner of Fisheries, Bureau of Fisheries Document No. 909, pp. 122-127, December, 1921.
19. Alaska Fur Seals. <Hamlyns Menagerie Magazine, London, August, 1921.
20. Alaska Fur Seals. <Reprint of above article in Yearbook of the Amateur Menagerie Club, London, 1921.
21. A Fossil Ammonite Exhibited. <Golden Gate Pathfinder, Vol. II, No. 15, p. 15, July 17, 1921.
22. Galls and Gall Insects Exhibit in Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 16, p. 12, July 24, 1921.
23. Flower Exhibit in the Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 17, p. 15, July 31, 1921.
24. Pictures of California Lilies. <Golden Gate Pathfinder, Vol. II, No. 18, p. 15, August 7, 1921.
25. Steller Sea Lion Group, Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 19, p. 16, August 14, 1921, 1 figure.
26. A Lecture by a Plant Expert. <Golden Gate Pathfinder, Vol. II, No. 19, p. 15, August 14, 1921. (Lecture by Dr. Albert Mann on Diatoms.)
27. California Sea Lions, Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 20, p. 16, August 21, 1921, 1 figure.
28. Grizzly Bear shot by Dr. Pope with Bow and Arrow—now being installed in Academy of Sciences Museum. <Golden Gate Pathfinder, Vol. II, No. 21, p. 15, 1 figure, August 28, 1921.
29. Hair Seals in California Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 21, p. 16, 1 figure, August 28, 1921.
30. The Mule Deer Group, Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 22, p. 16, 1 figure, September 4, 1921.
31. Desert Bird Group, Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 23, p. 16, 1 figure, September 11, 1921.
32. The Fur-Seal Group, Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 24, p. 16, 1 figure, September 18, 1921.
33. The White Pelican Group, Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 25, p. 15, 1 figure, September 25, 1921.
34. Sunday Afternoon Lectures at the Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 26, p. 3, October 2, 1921.
35. The Antelope Group, Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 26, p. 16, 1 figure, October 2, 1921.
36. Sunday Afternoon Lectures at the Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 27, p. 13, October 9, 1921.
37. The Coyote Group, Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 27, p. 16, 1 figure, October 9, 1921.
38. Farallon Islands Bird Rookery in the Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 28, p. 16, 1 figure, October 16, 1921.

39. Progress on Steinhart Aquarium. <Golden Gate Pathfinder, Vol. II, No. 29, p. 10, October 23, 1921.
40. The California Condor Group, Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 29, p. 16, 1 figure, October 23, 1921.
41. The Mountain Lion Group, California Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 30, p. 16, 1 figure, October 30, 1921.
42. The Wild Birds of Golden Gate Park. <Golden Gate Pathfinder, Vol. II, No. 31, p. 16, November 6, 1921.
43. The Tree Ferns of Golden Gate Park. <Golden Gate Pathfinder, Vol. II, No. 32, p. 16, November 13, 1921.
44. The Roosevelt Elk Group, Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 33, p. 16, 1 figure, November 20, 1921.
45. The Academy of Sciences Expedition to South America. <Golden Gate Pathfinder, Vol. II, No. 34, p. 5, November 27, 1921.
46. The San Joaquin Valley Water Fowl Group, Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 34, p. 16, 1 figure, November 27, 1921.
47. The San Joaquin Valley Water Fowl Group, Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 35, p. 16, 1 figure, December 4, 1921.
48. The Academy of Sciences Expedition to South America. <Golden Gate Pathfinder, Vol. II, No. 35, p. 5, December 4, 1921.
49. Exhibit of Painted Flowers in California Academy of Sciences. <Golden Gate Pathfinder, Vol. II, No. 36, p. 10, December 11, 1921.
50. The Robins of the Park. <Golden Gate Pathfinder, Vol. II, No. 36, p. 16, December 11, 1921.
51. The Sparrows of Golden Gate Park. <Golden Gate Pathfinder, Vol. II, No. 38, p. 16, December 25, 1921.

Mailliard, Joseph

1. Notes on some Specimens in the Ornithological Collection of the California Academy of Sciences. <The Condor, Vol. XXIII, No. 1, pp. 28-32, February 3, 1921.
2. Census of Birds' Nests in the Music Concourse, Golden Gate Park, San Francisco, Calif., for 1920. <The Gull, Vol. III, No. 2, pp. 2-3, February, 1921.
3. Anent Red-winged Blackbirds. <The Condor, Vol. XXIII, No. 2, pp. 66-68, March 31, 1921.
4. New Bird Records for North America with Notes on the Pribilof Island List. <The Condor, Vol. XXIII, No. 3, pp. 93-95, June 3, 1921 (with G. Dallas Hanna).
5. Report of the Department of Mammalogy for 1920. <Proceedings California Academy of Sciences, 4th Ser., Vol. X, No. 12, p. 147, July 2, 1921 (in Report of Director for 1920).

6. Report of the Department of Ornithology for 1920. <Proceedings California Academy of Sciences, 4th Ser., Vol. X, No. 12, pp. 148-149, July 2, 1921 (in Report of Director for 1920).
7. Notes on the Birds and Mammals of Siskiyou County, California. <Proceedings California Academy of Sciences, 4th Ser., Vol. XI, No. 5, pp. 73-94, July 11, 1921.
8. Handy Collecting Case. <Journal of Mammalogy, Vol. II, No. 3, pp. 174-176, 1 text-figure, August, 1921.
9. Extension of Breeding Range of Marsh Sparrow and Monterey Hermit Thrush. <The Condor, Vol. XXIII, No. 5, pp. 164-165, September 26, 1921.
10. Notes on Fall Migrations of Fox Sparrows in California. <The Condor, Vol. XXIII, No. 6, pp. 178-182, November 19, 1921.
11. Concerning Incubation on the Part of the Male Belted Kingfisher. <The Condor, Vol. XXIII, No. 6, pp. 194-195, November 19, 1921.

Van Denburgh, John; and Slevin, Joseph R.

1. A List of the Amphibians and Reptiles of Nevada, with Notes on the Species in the Collection of the Academy. <Proc. Calif. Acad. Sci., 4th Ser., Vol. XI, No. 2, pp. 27-38, July 8, 1921.
2. A List of the Amphibians and Reptiles of Idaho, with Notes on the Species in the Collection of the Academy. <Proc. Calif. Acad. Sci., 4th Ser., Vol. XI, No. 3, pp. 39-47, July 8, 1921.
3. A List of the Amphibians and Reptiles of the Peninsula of Lower California, with Notes on the Species in the Collection of the Academy. <Proc. Calif. Acad. Sci., 4th Ser., Vol. XI, No. 4, pp. 49-72, July 8, 1921.
4. Preliminary Diagnoses of New Species of Reptiles from Islands in the Gulf of California, Mexico. <Proc. Calif. Acad. Sci., 4th Ser., Vol. XI, No. 6, pp. 95-98, July 30, 1921.
5. Preliminary Diagnoses of more New Species of Reptiles from Islands in the Gulf of California, Mexico. <Proc. Calif. Acad. Sci., 4th Ser., Vol. XI, No. 17, pp. 395-398, December 17, 1921.

Van Duzee, Edward P.

1. Characters of some new species of North American Hemipterous insects with one new genus. <Proc. Calif. Acad. Sci., Vol. XI, No. 10, pp. 111-134, October 15, 1921.
2. Our North American species of Strongylocoris. <Proc. Calif. Acad. Sci., Vol. XI, No. 11, pp. 135-136, October 15, 1921.
3. Characters of eight new species of North American Anthocoridae or flower bugs. <Proc. Calif. Acad. Sci., Vol. XI, No. 12, pp. 137-144, October 15, 1921.
4. A study of North American grass-bugs of the genus Irbisia. <Proc. Calif. Acad. Sci., Vol. XI, No. 13, pp. 145-152, October 15, 1921.



5. Orthoptera, Neuroptera, Hemiptera and Lepidoptera from the Pribilof Islands, Alaska. <Proc. Calif. Acad. Sci., Vol. XI, No. 14, pp. 193-195, November 2, 1921.

#### NEEDS OF THE MUSEUM

The needs of the Museum are many and urgent; so many and so urgent that it is not easy to list them in sequence of importance. The one that perhaps should be mentioned first is that of buildings. The Museum has already grown far beyond its present room-capacity. Every department is crowded; most of them have overflowed into the adjacent halls. Great quantities of valuable collections are stored in the basement and under the floor of the Mammal Hall where one cannot walk erect and where there is no provision for lighting. It is therefore next to impossible even to inspect them and see that they are not deteriorating, and absolutely impossible to use them. As one illustration, there is stored away in this darkness a large and very valuable collection of woods that would make an extremely attractive and instructive exhibit if we only had space in which to display it.

We now have no place for exhibits of insects, mollusks, reptiles, amphibians, fossils, invertebrates and plants. We have already material on hand that would make splendid exhibits in these lines. We have no room for any of the several wonderful large animals of Alaska and the far north—the big brown bears of Alaska, the glacier bear, polar bear, the moose, caribou, musk ox, mountain sheep, mountain goat, buffalo, walrus, and many other great mammals of North America many of which are doomed to extinction in the near future. And we can do nothing with the great mammals of Africa and other foreign countries until we get more buildings.

These needs are so great that it is earnestly hoped the Trustees may give the matter early, serious, and sympathetic consideration. The proposed East Wing should be built in the near future, and the Whale Court should be enclosed at once. Closing in the Whale Court would help immensely. The expense would be moderate, probably not exceeding \$30,000.

And then we need several endowments. Every department of the Museum should have an endowment that would yield an annual income adequate to meet all its expenses—curators' and assistants' salaries, field work, study of collections and

preparation of reports of scientific investigations, purchase and care of collections, laboratory equipment, and all other expenses necessary to maintain an efficient and productive department. It is needless to say that *any* sum for endowment, however small, will be welcomed and accepted with gratitude. An endowment yielding an annual income of any amount up to \$5,000 to \$10,000 would be excellent.

*Library*—Among the greatest and most serious needs of the Academy are those of the Library. The amount of money which we can set aside in the budget for library purposes is far from meeting the pressing needs of that department. We need more money for the purchase of books, serial scientific publications and periodicals; particularly reports of the early exploring expeditions, volumes to complete sets of journals, bulletins, proceedings and transactions of learned societies; special monographs and treatises of a technical character, books of reference, and general natural history publications. One class of publications that we are endeavoring to complete in so far as is possible is the reports of exploring expeditions in western America and in the Pacific. These are indispensable in our work. Their cost will increase from year to year.

And then we need money for binding. The Library contains hundreds of unbound volumes of important publications and thousands of pamphlets that should be bound not only to facilitate their use, but to protect them against injury and that gradual deterioration inevitable with unbound papers.

It is also quite necessary that there should be a regular permanent staff to do the accessioning, card cataloguing, and other duties necessary to keep the Library in proper condition.

One of the best things that can be done by anyone interested in the Academy would be to provide an endowment for library purposes, the larger the better, but any amount would help.

*Publication*—The income of the Academy is too small to permit the amount for publication that is needed. Because of lack of funds, the Academy is unable to use the grade of paper for text or illustrations that the high character of our publications demands. The paper we are using will probably not last longer than 75 to 100 years.

We are also unable to accept for publication many excellent papers that would be valuable contributions to knowledge and

whose publication by the Academy would reflect credit upon it.

The Academy should have a permanent publication endowment which would yield an annual income of \$10,000 to \$15,000; but any amount would help. We have already a small endowment of \$10,000 for this purpose, known as "The John W. Hendrie Publication Endowment." Any new endowment received would be known by the name of the man or woman giving it.

*Auditorium*—The Academy maintains a Sunday afternoon lecture course. The lectures are given at 3 o'clock every Sunday in the Auditorium of the Museum in Golden Gate Park. These lectures are of popular character, usually on scientific subjects, and are given by specialists. They are free to the public. That they are appreciated is evidenced by the large audiences; the hall is almost invariably filled and standing room is in demand. It frequently happens that many have to be turned away for lack of room.

Among those who have given lectures in these courses are many of the most distinguished scientific men and publicists in America. They have been glad to appear in the Academy lecture courses entirely without compensation other than that which comes with the knowledge of having rendered public service in popularizing science. Nevertheless, the Academy regrets that it has no lecture fund from which it can at least pay the lecturer's actual expenses.

The hall in which these lectures are given is not at all suitable for the purpose. It is entirely too small and is very poorly furnished. The seats now used are mere makeshifts and the general equipment is not good.

A much larger hall of proper construction and with suitable seats and other necessary furnishings is urgently needed. It is hoped that some public-spirited citizen, who wishes to do a really splendid thing for the community, will supply the Academy with the money necessary to provide an adequate auditorium suitably equipped, and with a small endowment which will yield an income sufficient to meet the running expenses.

In addition to the Auditorium room proper, there should be at least one smaller room suitable for the use of committees, for the Boy Scouts that hold weekly meetings at the Museum,

and for other societies and committees that at times desire to hold meetings at the Museum.

The proposed Auditorium would, of course, bear the name of the donor or of the man or woman for whom it is established as a memorial. A more fitting, dignified, and educationally useful memorial can scarcely be conceived.

In the weekly announcements of the lectures and other functions to be held the name of the Auditorium would always appear. These announcements go to every one of the thousand members of the Academy. They, on large placards, are displayed in most of the school buildings in San Francisco, on the bulletin boards at the University of California, at Stanford, and in other places.

In this way the Auditorium would soon become the best known memorial building in the city. The cost of such a memorial building would not be great, considering its usefulness, and the sentiment which inspired its erection. It would never appear cheap or inadequate, but would always stand as a dignified memorial in which those who provided it will ever feel a just pride.

Is there not some one in San Francisco, some one who has prospered in this world, who can come forward and do this splendid thing for the educational improvement, culture and entertainment of our people?

Several other needs of the Academy might be mentioned, but these will suffice to show that we must have more money to meet the cost of our present needs and to provide for the inevitable growth of the next few years.

#### DEPARTMENT REPORTS

The various curators and their assistants, as in the past, have been active and efficient in building up and caring for the collections in their respective departments.

Early in the year, after consultation with the curators, the Director arranged to have monthly meetings of the Museum staff. These meetings are held in the Library at 9:30 A. M. of the second Friday before the last Saturday of each month.

At these meetings the interests of the various departments and the Museum as a whole are discussed. For example, at one meeting the Curator of Herpetology explained clearly and



fully the methods of his department in collecting and other field work, the tagging and preservation of specimens, the recording of field observations, etc., the care of specimens when they reach the Museum, the accessioning and card cataloguing of specimens, the care of specimens in the research collections, and many other matters, including the aims and purposes of the department. At the next meeting the Curator of Birds and Mammals did the same for his department, and the others followed. These meetings have proved extremely interesting and must certainly result in great good in several ways. In the first place, they give each curator an opportunity to become informed regarding the work of the other departments, their aims, purposes, ideas, methods, and accomplishments. In this way he is brought into closer touch with the Museum as a whole, and is made more appreciative of the work of his associates. Another excellent result of these "cabinet meetings" is that each curator is led to examine and consider more carefully the aims, methods and accomplishments of his own department.

Each curator very naturally and very properly is ambitious that *his* department shall be the best organized, the best conducted, and in every way the most up-to-date department in the Museum. When he hears from the others about their departments, he will the more critically examine the work of his own department and be inspired to greater effort. In the end the activities of the Museum will become more unified and more efficient.

#### DEPARTMENT OF BOTANY

The most noteworthy event in the history of the Herbarium of the California Academy of Sciences in the past year was the acquisition of the Albert Prager Herbarium from Leipsic, Germany. This was made possible through the generosity of the following members of the Academy: Mr. Wm. M. Fitzhugh, Mr. Wm. C. Van Antwerp, Mr. J. D. Grant, Mr. Wm. H. Crocker, Mr. Wm. F. Herrin, Mr. John C. Augsbury, and Mr. A. F. Morrison, who contributed the necessary funds. The price paid for the herbarium was \$1,000, to which was added the cost of packing, transportation, and some incidental expenses, which made the total cost \$1,266.53.

This herbarium was regarded as one of the largest and most important private herbariums in Germany and was sold chiefly because of the great age of the owner. We were most fortunate to have the chance

offered to us and to be able through the generosity of the patrons and friends of the Academy to secure this collection for our herbarium, which thus becomes the greatest cosmopolitan collection on the Pacific Coast and west of the Mississippi.

Professor Prager's account tells the history and importance of the collection and follows in translation:

"The herbarium was founded in 1878 through original collections in Germany, the Alps, and Northern Italy. Its first important addition came through the purchase of Dr. Hampe's herbarium, which I bought in 1886 after his death at a rather high price. It contained besides German and Adriatic plants, a great rarity in the authentic collections of Ecklon and Zeyer in the Cape Region of Southern Africa in 1843 and 1844, containing about 1,200 species, most of which were until then unknown and on which the foundation for the Flora of South Africa was made. There were only a few sets of these collections and they are priceless, impossible now to obtain. From 1886-1892 the herbarium was enlarged by my own collections and the purchase of two important scientific herbariums, namely that of Professor Stengler and that of Professor Schlechtendahl. The last is most valuable as it contains the collections of several important botanical expeditions, namely, Willkom, Spain; Fischer & Meyer, Mediterranean countries and Algeria; Spreuner, first scientific expedition to Greece and Asia Minor, containing many plants until then unknown; Schimper, the great Arabia, Sinai, Egypt Expedition of 1825-26. This expedition traveled through a country botanically very little known, and was made possible through the unusual kindness of the Turkish rulers, never before extended to a Christian expedition. At that time no travelers came to Arabia, as the country was strictly barred against all unbelievers. This collection is complete in the Prager Herbarium and is priceless now and impossible to obtain. A new period of growth came to the Prager Herbarium through a new correspondent, Dr. Von Betché, the recently deceased Assistant Director of the Botanical Institute at Sydney, Australia. During ten years this authority on the flora of Australia sent me one of the largest collections of Australian plants and so many duplicates that I was able to secure other collections by exchange. I exchanged with the University Greifswald, Upsala (Norwegian and Lapland plants), Agram (Roumanian plants collected by Von Iriwaldsky), Prague (Carpathian), Wurtzburg, even with St. Petersburg from where I obtained the collection of the Central Asiatic expedition to Saisang-Nor, Hohenacker's Caucasian expedition, the Kamchatka and North Siberian expedition of Pallas. From Mr. Forsyth, now Director of the Botanical Gardens at Adelaide, Australia, then at Pt. Darwin, I obtained 400 species of the very little known flora of Northern Australia and a large amount of exchange material. These exchange specimens enabled me to acquire two important collections, namely, Dr. Schaffner's Mexican collection, 300 species, and Baron von Eggers' West Indian collection, 300 species. From Dr. von Betché I obtained, furthermore, his fine collection of Samoan ferns, collected chiefly on Upola

during two years and the most complete collection of Samoan ferns in existence."

#### SUMMARY OF THE PRAGER COLLECTION

Twenty thousand species phanerogams, 500 ferns, 500 mosses and hepatics, chiefly German; 500 algæ, Germany, and German seas; 3,000 fungi, all Europe, including the classic collection of Dr. Baenitz; 100 lichens, middle Europe; 10 boxes of microscope slides of diatoms and other botanical specimens.

Many species are represented by specimens from different parts of Europe and Asia, so that the number of specimens far exceeds the number of species. The species are catalogued by hand in 21 volumes, under the families and genera, according to the system of Engler and Prantl, in *Pflanzenfamilien*.

Some genera are represented by many specimens collected and named by authorities; for instance, *Rubus*, *Rosa*, *Erica* and *Statice*, besides the classic Hohenacker's collection of cereals numbering 200. We have estimated from the catalogue even a greater number of species than Dr. Prager. According to the estimate, there are represented in the phanerogams and ferns 1,090 genera and 21,006 species; mosses, 30 genera and 401 species; lichens, 19 genera and 279 species; fungi, 3,656 species; algæ, 500 species, and hepatics, 65 species, making a total of 22,907 species altogether.

The regular herbarium, exclusive of the Prager Herbarium, now contains 70,762 mounted specimens, and 4,698 unmounted specimens of mosses, lichens, and hepatics, bringing the total to 75,460, an increase for the year of 7,671 specimens. The collections made in Lower California, by Ivan M. Johnston, the botanist of the Expedition, are not included, as at present the exact status of the collection is not known. Specialists who have examined some of the groups assert that, in spite of the fact that the time when the collecting was done was the most unfavorable of the year, it is the best collection ever made in that little explored region. Mr. Johnston estimates about 1,500 numbers, represented by probably 6,000 specimens. There are about 300 species of which about 50 are new to science. The report will be ready for publication in the spring.

The most notable contributions to the herbarium have been as follows: 560 from Idaho by purchase; by exchange: N. Y. Botanical Garden, 225 lichens, 50 mosses from Montana, and 747 miscellaneous; Arnold Arboretum, 1,557 trees and shrubs; National Herbarium, 1,421 miscellaneous specimens, and Ira D. Clokey, 223 from Colorado. Seventy-four different persons have contributed to the herbarium, often specimens for identification, but there have been some notable gifts. Among these are 77 species of *Veronica* from New Zealand, by Dr. L. Cockayne, the well-known authority on New Zealand plants and a specialist on the genus. He plans to have represented in our herbarium all the New Zealand species of *Veronica* obtainable. Mr. C. Piper Smith has given us a valuable lot of specimens chiefly from Utah and Maryland, and

Dr. H. M. Hall, 215 miscellaneous specimens, many among them of genera on which he specializes. Eric Walther continues to add to the collection of exotics cultivated in California and has brought 692 specimens to the collection. His zeal in seeking new plants and in adding better and more complete specimens to what we already have is unbounded. It is through this earnest and capable gardener that the labelling of the trees and shrubs in Golden Gate Park is being gradually accomplished. It is expected before long that a list of the trees and shrubs can be ready for publication with a map of the park on which the position of the labelled specimens is indicated.

Miss Anna Head collected a large number of plants in Mendocino County and the Feather River region, amounting to about 550 specimens, some of them duplicates.

Mrs. E. C. Sutcliffe has been indefatigable in collecting and identifying the Hepaticæ, and with the assistance of Mrs. Marian L. Campbell, has collected 61 species, chiefly in Marin and Plumas counties, which are beautifully prepared and have been sent for verification to Dr. Evans, who is an authority on this group.

The curator made several week-end trips to type localities not far from San Francisco in search of certain species, but with few exceptions the search was unsuccessful because the places were occupied by habitations and the wild land had become cultivated fields. Along the roadsides the ground was monopolized by immigrant plants which had crowded out the natives. One week-end trip was taken to Willows, Glenn County, where a small collection was made and the rare *Pilularica americana* found in an irrigating ditch. In July I was the guest of Mr. Wm. F. Herrin on a trip by automobile through Mendocino, Humboldt, Trinity, Shasta, and Siskiyou counties, and later to Medicine Lake, a small sheet of water in Siskiyou County, in a country of obsidian and lava. Altogether the curator's collections amounted to about 1,107 specimens.

Lewis Allen, one of the gardeners in the Park, has taken some fine photographs of trees and shrubs, chiefly Eucalypti, to show the habit and character of the bark, and has donated 42 to be added to the mounted specimens in the herbarium. J. August Kusche always has the herbarium in mind when collecting insects and has given 36 specimens of lichens and 29 mosses, from the Hawaiian Islands, a small unnamed collection from the Solomon Islands, and a collection made in winter at Needles on the Colorado River.

The flower exhibit at the entrance of the Museum continues to be a popular feature and is continuously kept up during the year. Several thousand species of native and exotic plants are exhibited during the year, each labelled plainly with scientific name, popular name if there is one, and the country or locality where the plant is native. Without the care of Mrs. Johanna Wilkens in keeping the shelves and receptacles clean, removing the old flowers and installing the fresh ones, it would not be possible to make this exhibition a success.



The Botanical Club holds weekly meetings or excursions and the class of gardeners meets in the herbarium every Thursday evening. The gardeners bring in rare plants for identification and are enthusiastic supporters of the herbarium. Antone Blazic, one of them, who is now in Florida, has sent about 100 specimens of native and exotic plants from Palm Beach and Miami. Besides these activities towards popularizing botany, the curator gives informal talks to clubs and schools, particularly emphasizing the need to spread the gospel of conservation of the native flora.

My assistant, Mrs. Kate E. Phelps, has been most efficient in mounting the accessions, putting them in their proper places in the herbarium, making an inventory of the collection, and generally looking after the specimens to be pressed and dried. In California this can go on throughout the entire year and takes a great deal of time and attention.

It has been impossible so far for me to do any original botanical work which adds so much to the scientific value of the herbarium, because my time is taken up with the herbarium detail work necessary to keep so rapidly growing a collection in order, and a great deal is work that only a botanist can do. I greatly need a botanical assistant as well as my present poorly paid helper.

ALICE EASTWOOD, *Curator*.

#### DEPARTMENT OF ENTOMOLOGY

The outstanding feature of the work in this department during the year 1921 was the Academy's Expedition to the Islands of the Gulf of California, in which the curator took part as entomologist. This expedition was in the field from about April first to July fifteenth, which was at the end of the dry season there, and the worst possible time for collecting insects. The few insects about at that time were those that had survived a long dry season and had escaped their foes among the birds, lizards and other forms of predaceous life. A very considerable portion of the material taken was found in æstivation, either under stones and rotting wood or, in many cases, was dug out of the ground from about the roots of trees or bushes. In spite of these obstacles, over 13,000 specimens of insects were secured. After the return of the expedition much of the spare time of the curator for two or three months was occupied in mounting the specimens, printing and attaching the, over 30,000, pin labels required for this material, and in getting it assorted for study. A good beginning has now been made in the determination of these insects. Dr. F. E. Blaisdell has made good headway with the Tenebrionidæ and has found a very large percentage of new forms among them. Mr. F. R. Cole, who is working up the Diptera, has found an almost equally large proportion of new forms among the Bombyllidæ, or bee-flies. Prof. T. D. A. Cockerell is now working on the bees and has found more than half the species to be new. Miss Annette F. Braun has worked up the few microlepidoptera taken, describing several new forms. Other material from this expedition has been sent to the fol-

lowing specialists: the Anthomyidæ to Mr. J. R. Malloch, the Dolichopodidæ to Mr. M. C. Van Duzee, the Chrysididæ to Mr. L. H. Taylor, the Elateridæ, Buprestidæ, Cleridæ and Cerambycidæ to Dr. E. C. Van Dyke, the Aleocharinæ to Dr. A. Fenyès, the Bembecidæ to Mr. C. L. Fox, the Orthoptera to Mr. Morgan Hebard, and the Geometridæ to Mr. W. S. Wright. The curator has now completed work on nearly half of the Hemiptera and finds about one-fourth of the species to be new. The Sonoran insect fauna of Mexico has never been worked up with any approach to completeness and in only a few groups has collecting been done, except in a most desultory way. No other region accessible to the Academy could yield such numbers of new forms. It is the metropolis of several groups of insects dominant in Southern California and it would seem that its careful exploration is one of the most important fields of scientific research still open to the Academy. It is a field which will soon be covered by eastern institutions if this Academy does not undertake it.

In addition to the insects taken by the Gulf expedition, Mr. J. C. Chamberlin, who was one of the party, brought home for the Academy collection over 5,000 spiders and about 1,200 scorpions, pseudoscorpions and myriopods. Dr. Ralph V. Chamberlin of Harvard University has worked up the myriopods, describing 11 of the 15 species as new, and is now working on the spiders, while Mr. J. C. Chamberlin is at work on the scorpions and pseudoscorpions.

As no new cases were added during the year little could be done in the arrangement of our collection, although 42 boxes were available for the reception of our North American butterflies. We were fortunate in securing the services, for three weeks, of Mr. W. S. Wright of San Diego, an authority in that group of insects. With his help our material was sorted over and arranged systematically so far as the boxes would contain them. Three families of butterflies still await the purchase of new boxes. The curator has had but little time during the year for systematic work on material other than that taken by the Gulf expedition, but a few collections of Hemiptera have been determined for other workers.

Accessions to this department during 1921 number 25,915 specimens, inclusive of the spiders, myriopods, etc., taken by Mr. Chamberlin. Of this number 19,273 represent the results of the Gulf expedition. By purchase the department has secured 2,400 insects, mostly butterflies and moths, taken by Mr. J. August Kusche in North Queensland and the Solomon Islands, and 778 specimens taken by Mr. Kusche at Needles, Calif. Several valuable donations were received: From Mr. Virgil Owen, 332 specimens, mostly from Arizona; from Prof. E. O. Essig, types and cotypes of several species of Aleurodidæ; from Mr. C. L. Fox, 1,088 insects, largely from Gold Lake, Calif.; from Dr. Isabel McCracken, 62 insect-galls mounted ready for exhibition; from Dr. E. C. Van Dyke, 1,348 insects from Yosemite Valley; from Mr. J. O. Martin, 333 insects from California; from Mrs. H. E. Ricksecker, 294 insects from Cisco,

Calif. Other valuable donations were received from Dr. F. E. Blaisdell, including several paratypes and many eastern beetles, Mr. Louis Slevin, California insects, Mr. E. R. Leach, Mr. Chas. Kendrick, Mr. J. W. Mailliard, Mr. W. M. Giffard, and Mr. Jos. Mailliard. During three months of the year the curator had the help of Mr. J. O. Martin in mounting and labelling the specimens received.

The most pressing need in this department for the coming year is the purchase of more cabinet boxes. At least four cases of 168 boxes should be added this year to make possible the proper systematic arrangement of the material that has been studied and is ready for incorporation in our systematic collections. Material stored away, as much of ours now is, is not only unavailable for study but is subject to attack by insect pests.

The curator would like again to call attention to the exceptional opportunity now existing for the Academy to take the lead in the entomological exploration of the Sonoran region of Mexico, an opportunity which it soon will be too late to embrace. This region was not covered in the work of securing material for the *Biologia Centrali-Americana*, and almost no systematic collecting has been done there except the little accomplished by the Academy in the early nineties. The importance of our occupying this field while it still is open to us is shown by the large number of new forms secured by this year's Gulf expedition. It is quite possible that the results of that expedition in the field of entomology will nearly or quite double the number of species known from those states, and at that but a start was made. The task is not limitless. New species now are not easy to find in the eastern states and that soon will be true of the Sonoran region, which includes Sonora, Lower California, Arizona and Southern California. Few institutions now have the chance to open up such a rich fauna at its very doors, and to secure the types of the many new forms, and the opportunity should not be allowed to pass unimproved.

EDWARD P. VAN DUZEE, *Curator*.

#### DEPARTMENT OF HERPETOLOGY

The Department of Herpetology during the year 1921 progressed satisfactorily and the work accomplished compares favorably with that of previous years.

At the beginning of the year 1921 the Academy's collection of reptiles and amphibians numbered 41,504 specimens. There have been added during the year 5,002 specimens, so that the collection has grown to 46,506 specimens.

The number of specimens added during each of the past six years has been about as follows: in 1916, 1,500 specimens; in 1917, 1,600; in 1918, 1,724; in 1919, 2,666; in 1920, 1,466, and in 1921, 5,002.

Gifts of specimens during the year have been received as follows: From Miss Mary McLellan, 106 specimens; Dr. Thomas Barbour, 18; Prof. V. M. Tanner, 10; Richard P. Erwin, 200; Dr. E. C. Van Dyke, 7;

E. G. Osterhoudt, 5; Mrs. A. Jannopoulos, 1; Raymond Duhon, 1; Wm. Heim, 1; C. L. Fox, 1; Dr. E. D. Chipman, 1; Robert Hawxhurst, 1; Frank Stevens, 1. Total, 353.

Specimens have been secured from 12 counties of California, as follows: Calaveras, 1; Humboldt, 5; Imperial, 1; Los Angeles, 3; Marin, 7; Mariposa, 7; San Mateo, 1; Santa Clara, 4; Santa Cruz, 1; Sonoma, 1; Tulare, 2; Ventura, 175.

Specimens from other localities are: Arizona, 2; California, 214; Florida, 8; Idaho, 206; Indiana, 2; Maine, 50; Maryland, 14; Massachusetts, 53; Michigan, 8; Nevada, 7; New Hampshire, 78; New Mexico, 4; New York, 25; North Carolina, 2; North Dakota, 8; South Dakota, 1; Texas, 8; Utah, 254; Vermont, 87; Virginia, 23; Washington, 17; West Virginia, 10; Africa, 59; Asia, 17; Austria, 7; Portugal, 1; Switzerland, 2; Corsica, 2; Sardinia, 1; Central and South America, 83; Mexico, 3,238; West Indies, 72; Fiji Islands, 1; Friendly Islands, 179; Marshall Islands, 4; Samoan Islands, 106; Solomon Islands, 81; other Pacific islands, 3; Australia, 3; East Indies, 17. The expedition to the Gulf of California resulted in the addition of 3,223 specimens to the collections of this department; among these were 20 new species of reptiles.

The classification, labelling, cataloguing and arrangement of the collection was continued during the year.

Much research has been carried on during the year. Lists of the amphibians and reptiles of Nevada, Idaho and the Peninsula of Lower California, with notes on the specimens in our collection, have been printed. A descriptive account of all of the reptiles of Western North America has been completed, and preliminary descriptions of 16 new species of lizards and snakes have been published.

The snakes of the genus *Diadophis* were borrowed by Dr. Blanchard of the University of Michigan, and a large collection of oriental salamanders was sent to Dr. Dunn of Smith College for study. A series of our California racers was studied by A. I. Ortenburger of the University of Michigan.

JOHN VAN DENBURGH, *Curator*.

#### LIBRARY

Work in the Academy library has been kept up-to-date throughout the year 1921 and considerable progress has been made toward the incorporation into the library of the miscellaneous material accumulated during past years. The number of volumes acquired by purchase during the year was much smaller than in 1920, due to the excessive prices now being charged by the European dealers and the difficulty experienced in securing books at any price from the continental dealers. Additions by gift were much more numerous than during the previous year. Most of these additions came through the gift of Dr. Barton Warren Evermann, Director of the Museum, a gift constituting by far the most important single accession received by the library in recent years. This donation numbered about 6,500 items of which nearly 1,000 were bound



volumes, and 2,800 were classified and fully catalogued pamphlets and excerpts, largely on the subject of fishes, the fishery industries and other natural history subjects. Other gifts to the Academy library have been received from Mrs. Nelly Waterhouse Dorne, Miss Alice Eastwood, Mr. J. W. Mailliard, Mr. J. O. Martin, Dr. G. Dallas Hanna, Dr. F. E. Blaisdell, and other individuals and institutions.

Additions to the library during the year number 1,380 bound or complete volumes and many pamphlets, excerpts and miscellaneous papers. Of the complete volumes 205 were obtained by purchase, 914 by gift, and 261 by exchange. During the year 2,315 volumes were entered on the accession register of the library, bringing the total number of accessioned volumes up to 16,395.

Until August first the work in the library was, as in the previous year, in the hands of Miss Mary E. McLellan and Mrs. Helen Van Duzee. Miss McLellan then severed her connection with that department and Mrs. Van Duzee has since attended to all departments of the library work with the assistance, during a part of the time, of Miss Pauline Kusche. All these have given faithful and efficient service, resulting in very satisfactory progress in the work of the library. The use of the library has been even more gratifying than during previous years, especially in its connection with the work being done in the several departments of the Academy. The membership use of the library also has been most satisfactory during the past year, and it is hoped that this feature of its activities may grow proportionately with the increase of the library and of its equipment.

E. P. VAN DUZEE, *Assistant Librarian*.

#### DEPARTMENT OF MAMMALOGY

The work of this department has been carried on incidentally to that of the Department of Ornithology, as before, and the trapping of rodents and other small animals was made a part of the work of each field party. For want of proper assistance, it has not been possible to undertake any work with the larger animals.

All of the specimens in the care of the department have been catalogued and arranged during the past year; a satisfactory skin room has been constructed and all the larger skins placed therein, with provision made for thorough fumigation as often as seems necessary to prevent attacks of troublesome insect pests. The removal of a large number of skins from the metal cases has made many of these cases available for departmental use and saved the department from the necessity of immediate purchase of additional ones.

The number of recorded specimens of all classes in this department is 3,978, including the following additions for the year: *By exploration*, 200 specimens. *By gift*: Dr. Sterling Bunnell, 1 specimen; Mr. A. Christoffersen, 1; C. I. Clay, 1; Mr. Joseph Dixon, 1; Dr. G. Dallas Hanna and Marcus Hanna, 2; Mr. John McLaren (Golden Gate Park), 3; Miss M. E. McLellan, 1; Miss Susie Peers, 1; Quarantine Division, Cali-

fornia Department of Agriculture, 1; Mr. A. W. Robison, 1, and Mr. W. G. Wright, 4. *By purchase*: 7 specimens.

A great deal had been anticipated as a result of the Academy's expedition to the Gulf of California, as there must be many undescribed insular forms of small mammals upon the islands there, but the unfortunate illness of the representative from this department, who was also representing the Department of Ornithology, put a stop to all such work, and the returns were practically nothing in comparison with what they should have been.

JOSEPH MAILLIARD, *Curator*.

#### DEPARTMENT OF ORNITHOLOGY

During the year 1921 more work has been accomplished in this department than for several previous years. Great progress has been made in the classification and registration of the ornithological specimens; and the matter of systematizing, mounting and arranging the growing collection of birds' eggs has been undertaken, and is now well along toward completion. The services of Miss Mary E. McLellan have been secured, and with her assistance and that of Mr. Chase Littlejohn, assistant curator, all this work is reaching such a satisfactory status that time will be available in the near future to permit the resumption of research work.

In the field the department has shown marked activity. Most unfortunately, however, this department's representative on the Academy's expedition to the Gulf of California was disabled by illness very soon after the field of action was reached and hence the results, except for the collecting of a number of rare specimens of birds' eggs, were extremely disappointing. The most valuable portion of the eggs secured was an exceptionally fine series of eggs of the Elegant Tern (*Sterna elegans*), which gives the Academy possession of what is probably the best representation at present existing of these variedly and beautifully marked eggs.

On account of the amount of the funds devoted to the expenses of the Gulf of California Expedition, field work in California was somewhat circumscribed, but a fair amount was carried on along the same lines as in recent years.

With Mr. Chase Littlejohn as assistant, the curator took the field on the northwest coast of California for the observation of bird migration, the collection of resident species for comparison and identification, and the recording of such species as might be noted by the field party. Requa, Del Norte County, was the locality selected for this work because of its being actually on the coast, as well as being in a region in which but little work of this sort had been carried on. This field was reached on April 20, and there, with the exception of some side excursions of short duration, operations were carried on until June 2. The means of transportation were the ordinary train and stage. Through the courtesy of the superintendent of the Hoopa Indian Reservation, Mr. J. B. Mortsof, within whose jurisdiction it was, the Indian Service cottage at Requa was placed at the disposal of the field party, by which it was occupied during the greater part of the time passed in the field.

A trip of a few days was made to Patrick's Creek, some 30 miles northwest of Crescent City, on the road to Medford, Oregon, and several days were passed in this locality, which is on the dividing line between the humid coast belt and the more arid interior.

On the way back to San Francisco a stop of several days was made at Eureka, and some interesting points in that vicinity were visited, where various specimens and notes were obtained.

The rewards of this field work were in the making of several new geographic and migrational records, which extend the known range of some of the species met with, the securing of a number of specimens of resident birds, and the compiling of a list for future reference of the land birds noted in that portion of Del Norte County in which Requa is situated.

The autumn field work consisted in the revisiting of part of the ground covered in the spring, in order to obtain certain residents thereof in the freshest fall plumage, and to make observations upon the fall migration of the fox sparrow group, in continuance of similar work done in the past two seasons. This trip was made in company with Mr. Chester C. Lamb as assistant, with complete camp outfit and means of transportation. The party remained in the field from September 12 to October 12, the greater part of the time either actually on, or at least within a few miles of, the coast itself, between Requa and the southern border of Humboldt County. Material for several papers was secured, as well as many specimens, and the known range of some species of birds considerably extended.

Accessions to the Department of Ornithology during the year have been as follows: Bird skins—*By exploration*: 384 specimens. *By gift*: Mrs. F. W. Beardslee, 6 specimens; Mr. Ralph Borden, 8; Dr. Sterling Bunnell, 1; Dr. Ernest D. Chipman, 1; Mr. A. Christoffersen, 1; Miss Ava Evermann, 2; Mrs. D. Ghirardelli, 1 case of South American Hummingbirds; Mr. W. M. Giffard, 1 specimen; Dr. Goodman, 1; Hackmeier and Company, 2; Dr. G. Dallas Hanna and Mr. Marcus A. Hanna, 20; Mr. F. C. Holman, 5; Miss Caro L. Kidder, 1; Mr. John McLaren (Golden Gate Park), 5; Miss M. E. McLellan, 47; Mr. James Moffitt, 1; Robison's Bird Store, 2, and Dr. J. R. Slonaker, 190. *By purchase*: 158 specimens.

The total number of specimens on hand at the end of the year is 38,903.

In addition to the above, the department has received specimens of birds' eggs, as follows: *By exploration*: 795 sets. *By gift*: Alaska Packers Association, 346 eggs; Dr. G. Dallas Hanna and Mr. Marcus A. Hanna, 68 sets and 43 nests; Captain B. McGrath, 3 eggs; Mr. Russel Ruble, 9 sets; Mr. F. L. Saylor, 1 nest, and Dr. J. R. Slonaker, 197 sets. *By purchase*: 8 Megapode eggs.

With these accessions the oölogical collection now comprises 3,778 sets.

JOSEPH MAILLIARD, *Curator*.

## DEPARTMENT OF INVERTEBRATE PALEONTOLOGY

On January 1, 1921, the Curator of the Department left San Francisco for Washington, D. C., at the request of the United States Commissioner of Fisheries, for the purpose of attending a conference on Alaska fur seals on January 10. Among other things accomplished, the persons present at the conference expressed entire satisfaction with the methods of fur seal computation which have been developed and applied by the writer from 1915 to 1920.

On the return trip from Washington a representative series of Cretaceous fossils was obtained at Austin, Texas; also a considerable collection of land shells was made there but at the end of the year they remained unsorted and uncatalogued.

A considerable amount of field work was done on this trip in various portions of Imperial Valley, California, particularly in the vicinity of Carrizo Creek. Collections then made were sufficient to warrant the completion of a report on the fossils of the region and the paper is now ready for the press except for the checking of a few stratigraphical observations in the region. The working up of the large amount of material secured on that trip occupied the greater part of the curator's time in the laboratory during the year, but it is felt that the results obtained have more than compensated for the time expended. During this study use was made of practically all collections from the region which have been assembled. These have been identified and returned to their respective owners with the exception of a small number of specimens which belong to the University of California; they were retained for a brief period for photographic purposes.

Other field work undertaken by the curator during the year consisted of two short trips to the Sierra Nevada Mountains and one to Point Reyes. On all of these the work was done in cooperation with Dr. Emmet Rixford of San Francisco, and primarily for the purpose of adding to the knowledge of the distribution of California mollusks.

The month of May and the first half of June were spent in the field in Los Angeles and Ventura counties, where the curator was ably assisted by Marcus A. Hanna of the University of California. The collections of fossils made there fill important gaps in the Academy's series and provide an abundance of well preserved specimens for exchange. At the end of the year this material had not been catalogued. The trip furnished an opportunity to secure good series of land shells at many places, and some birds, eggs, reptiles and amphibians were collected.

The department was represented on the Gulf of California Expedition by Dr. Fred Baker of Point Loma, California, and the collections in conchology and paleontology made by him and his associates are very large and valuable. They filled 28 packing cases and two tanks. The shipment arrived in San Francisco too late to be unpacked before the end of the year; therefore it is impossible to venture an estimate of the number of species or specimens collected.



The total number of accessions recorded during the year was 76, or 45,091 specimens. This does not include the three large collections which have been mentioned as remaining uncatalogued.

The most notable accession was the gift to the Academy of 29,698 land and fresh water shells by Mr. Edward C. Johnston of the U. S. Bureau of Fisheries. This large and well kept collection consisted chiefly of species from the Mississippi Valley. All cataloguing, indexing and identification had been done, so that practically no labor was required to place the collection ready for reference.

Other accessions which deserve special mention are the series of South Sea Island shells received from Miss M. E. McLellan, Mr. J. August Kusche and Dr. Roy E. Dickerson. A valuable collection of land shells was made in Del Norte County, California, by Mr. Joseph Mailliard and Mr. Chase Littlejohn while pursuing ornithological explorations. They covered a section of the state which was previously unknown conchologically.

Owing to the expense involved in connection with the Gulf of California Expedition, assistance in the laboratory was cut to a minimum. Therefore as much routine cataloguing and identifying of specimens was not accomplished as might have been expected.

Extensive use was made of the Academy's collection by various students, particularly by Mr. Frank M. Anderson of Berkeley, California, formerly curator and now honorary curator, of the department. In 1916 and 1917 Mr. Anderson spent several months in the United States of Colombia, where he was engaged in economic petroleum investigations. At odd moments he assembled a very considerable collection of recent and fossil mollusks which he generously presented to the Academy. In 1921 he spent much time in arranging and naming this collection and left it in practically perfect museum shape, thus relieving the staff of the department of a large amount of routine labor.

Mr. Anderson was so impressed with the problems which were partially unfolded by his first geological work in Colombia that he determined to make a second trip. He succeeded in arranging for the financing of an expedition for further study and accordingly departed on November 21 with three assistants. The party expects to return some time in the summer of 1922.

Others nearby who made use of the collections were Professor Bruce L. Clark of the University of California and his students; Marcus A. Hanna, Merle Israelsky and R. N. Nelson. Mr. Henry V. Howe of Stanford University found much material from the vicinity of Astoria, Oregon, which interested him and he described several new species from it.

Outstanding loans of material from the department at the end of the year were as follows:

Dr. S. S. Berry, Redlands, California, chitons; Dr. W. S. W. Kew, U. S. Geological Survey, fossil sea urchins; Dr. Bruce L. Clark, University of California, oligocene fossil mollusks; Mr. Marcus A. Hanna,

University of California, eocene venericard mollusks; Mr. Merle Isrealsky, University of California, fossil sea urchins; Miss Mary J. Rathbun, U. S. National Museum, fossil crabs, and Dr. T. Wayland Vaughan, U. S. Geological Survey, fossil mollusks from Mexico.

G. DALLAS HANNA, *Curator*.

#### ACCESSIONS TO MUSEUM AND LIBRARY

- Abernathy, Mrs. F. L., Berkeley: One specimen of Singing-fish (*Porichthys notatus*). Gift.
- Academy of Natural Sciences, Philadelphia, Pa.: One snake from Santa Rita Mountains, Ariz. Exchange.
- Alaska Packers Association, San Francisco: Three hundred and forty-six bird eggs from Alaska. Gift.
- Allen, Mr. Lewis, Golden Gate Park: Fifty-four photographs of trees, shrubs and cultivated plants, from Golden Gate Park and other localities near San Francisco. Gift.
- American Museum of Natural History, New York, N. Y.: One lizard from Lower California. Exchange.
- American Philosophical Society, Philadelphia, Pa.: Proceedings, Nos. 119, 177 and 179, and Transactions, Vol. XXI, Nos. 1, 2. Gift.
- Anderson, Mr. F. M., Berkeley: One California plant. Gift.
- Arnold Arboretum, Cambridge, Mass.: One thousand five hundred and fifty-seven specimens of shrubs and trees, cultivated and native. Exchange.
- Arnold, Mrs. A. R., Tracy: One botanical specimen from Tracy. Gift.
- Baker, Dr. Fred, Point Loma: One marine shell from Lower California, new to the Academy collection, and one fossil shell. Gift.
- Barbour, Dr. Thomas, Cambridge, Mass.: One lizard from Chihuahua and 15 other reptiles from Mexico and New Mexico. Gift.
- Bassinger, Mr. A. J., Davis: Twelve botanical specimens from Mt. Oso, Mt. Diablo Range. Gift.
- Bateman, Mr. William, Bakersfield: Two marine shells from Salina Cruz, Mexico. Gift.
- Baxley, Ellen Cooper, Santa Barbara: One botanical specimen. Gift.
- Beall, Mr. M. E., Berkeley: Boccaccio, Della Genealogia de gli Dei. Gift.
- Beals, Mr. E. A., U. S. Weather Bureau, San Francisco: Thirteen numbers of the Pedagogical Seminary, 13 numbers of the American Journal of Psychology. Gift.
- Bent, Mr. A. C., Taunton, Mass.: Fourteen bird eggs. Exchange.
- Beardslee, Mrs. F. W., San Francisco: One case of mounted birds. Gift.
- Bethel, Mr. Ellsworth, State Museum, Denver, Colo.: Two botanical specimens from Nevada. Gift.
- Bither, Mr. S. Hall, Berkeley: Two specimens of marble from Mariposa County, such as is used for the manufacture of carbonic acid gas. Gift.

- Blaisdell, Dr. Frank E., San Francisco: Seventeen numbers of North American Fauna. Gift.
- Blazic, Mr. Antone, Los Angeles: Sixty-three botanical specimens from Southern California and Florida, eight photographs of native trees on Mt. Wilson and in adjacent country. Gift.
- Borden, Mr. Ralph, Oakland: Eight ornithological specimens from Borneo and Australia. Gift.
- Bowles, Mr. J. Hooper, Tacoma, Wash.: Nest and set of six eggs of Tennessee warbler, and 12 other sets of bird eggs. Exchange.
- Bunnell, Dr. Sterling, San Francisco: One kangaroo rat from Alameda County, and one red-tailed hawk in flesh from Monterey County. Gift.
- Burlingame, Mrs. C., Sonoma: Eight botanical specimens from Sonoma County. Gift.
- Cain, Mr. Addison, Salt Lake City, Utah: One snake from Utah. Purchase.
- Cain, Mr. Brighton C., Salt Lake City, Utah: One desert tortoise from Utah. Purchase.  
Ten toads, two lizards, seven snakes, six frogs, 18 salamanders from Utah; one snake from Idaho, two lizards from Texas. Exploration.
- California Department of Agriculture, Quarantine Division, Sacramento: One shrew in flesh. Gift.
- California State Mining Bureau, San Francisco: Catalogue of the State Museum, in five volumes. Gift.
- Campbell, Mr. Harry A., San Francisco: Three hundred and thirty-one specimens of marine shells from the Arctic Coast of Alaska. Gift.
- Campbell, Mrs. Marian L., Mill Valley: One hundred and twenty-four specimens of plants from Southern California, 56 specimens from Shasta County, and three specimens from Mill Valley. Gift.
- Campbell, Mrs. Robert, Pasadena: One hundred and nineteen specimens of plants from Southern California. Gift.
- Carnegie Museum, Pittsburgh, Pa.: Two bird skins from the Kermadec Islands. Exchange.
- Chilton, Dr. Charles, Canterbury College, Christchurch, N. Z.: Eight maps of New Zealand. Gift.
- Chipman, Dr. Ernest D., San Francisco: Head of Wood Duck (*Aix sponsa*) taken in Marin County. Gift.
- Christofferson, Mr. A. P., San Francisco: Skull and horns of reindeer, and one study skin of Black Brant from St. Paul Island, Alaska; seven marine shells from Alaska, one pamphlet. Gift.
- Clay, Mr. C. I., Eureka: Skull of *Bison alleni* Lucas, from southern end of Humboldt Bay. Purchase.
- Clemens, Mrs. Mary S., Pacific Grove: Thirty-five specimens of mosses, chiefly from Big Fork, Montana; 22 grasses from Crater Lake, Oregon, and Plumas County, and 77 other botanical specimens from California localities. Gift.

- Clark, Dr. Frank C., Los Angeles: Sixty-one sets of birds' eggs (213 eggs) mostly from Napa County. Gift.
- Clokey, Mr. Ira W., Denver, Colo.: One hundred and thirty-nine plants, and 84 grasses, from Colorado. Exchange.
- Cockayne, Mr. L., Wellington, N. Z.: Seventy-seven Veronicas from New Zealand, some being duplicates of the types. Gift.
- Coleman, Mr. R. A., San Francisco: Five hundred and seventy-seven specimens of fossil shells and eight fossil whale bones from the vicinity of San Diego. Gift.
- Davidson, Miss Perry, Los Angeles: One fossil shell from Orange County. Gift.
- Dickerson, Dr. Roy E., Manila, P. I.: One thousand four hundred and seventy marine shells from the Philippine Islands. Gift.
- Dickey, Mr. Donald R., Pasadena: Twenty-four birds from Southern California. Exchange.
- Dixon, Mrs. Joseph, Berkeley: One California Shrew in flesh. Gift.
- Donohue, Mrs. Joseph A., Menlo Park: Two botanical specimens from Menlo Park and three from Chico. Gift.
- Eastwood, Miss Alice, California Academy of Sciences: Three hundred and seventy-seven botanical specimens from Siskiyou County, 50 from Mendocino County, 84 from Yuba County, 16 from Mount Hamilton, 31 from Humboldt County, 64 from Marin County, and 501 from other California localities. Exploration.
- Maiden, Critical Revision of the Genus *Eucalyptus*, 2 volumes. Gift.
- Ehrhorn, Mr. Edward M., Honolulu, P. I.: One hundred and seventy-one specimens of marine shells from localities near Honolulu. Gift.
- Erwin, Mr. Richard P., Boise, Idaho: Two hundred specimens of reptiles and batrachians from Idaho. Gift.
- Evermann, Miss Ava, Kokomo, Ind.; Specimen of Ruby-throated Hummingbird (*Trochilus colubris*) from Kokomo, Indiana. Gift.
- Evermann, Dr. Barton W., California Academy of Sciences: Approximately 6,500 books and pamphlets, chiefly on scientific subjects, including many serial publications of learned societies and institutions; specimen of moss from Alaska. Gift.
- One garter-snake, three specimens of ore from the Finnegan Mine, Carson Hill, Calaveras County; 12 sets of eggs of White Pelican, and one set Brewer's Blackbird eggs, from Pyramid Lake, Nevada; three living specimens of Snow Plant, six living specimens of Coral-root Orchid (*Corallorhiza biglovii*), one living specimen of Pine Mistletoe, six cones of the Big Tree (*Sequoia gigantea*), three cones of the Sugar Pine, shingles of the White Fir, Sugar Pine and Big Tree from the Giant Forest, and six other specimens of California plants. Exploration.
- Fenn, Mrs. R. W., Lindsay: Two botanical specimens from Lindsay. Gift.



- Fox, Mr. C. L., San Francisco: Four hundred and sixty-three specimens of Dipterous insects taken about Gold Lake, Sierra County, in July, 1921, and 70 specimens of moths from the same locality. Gift.
- Galleazzi, Mr. G., San Francisco: Brass from accordian reed plates, aluminum plates from same. These were parts of accordions in the store of G. Galleazzi & Sons, San Francisco, April 18, 1906. Gift.
- Garvey, Miss Maude S., San Francisco: One botanical specimen from Red Bluff. Gift.
- General Electric Co., Schenectady, N. Y.: One book, *Life in a Large Manufacturing Plant*, by Ripley. Gift.
- Ghirardelli, Mrs. D., San Francisco: Case of South American Humming-birds, and one botanical specimen from her garden. Gift.
- Giffard, Mr. W. M., Honolulu, T. H.: Two specimens of Pelee's Hair from Kilauea Volcano, three colored photographs showing panorama of Kilauea Volcano, and one bird skin from Hawaii. Gift.
- Gillon, Mrs. E. E., San Francisco: Tapa cloth from Samoa. Gift.
- Goodman, Dr. E., San Francisco: California Murre, juvenile, in the flesh, and two botanical specimens from San Francisco. Gift.
- Gunnison, Mrs. A. M., San Francisco: One botanical specimen from her garden. Gift.
- Hall, Dr. H. M., Berkeley: Two hundred and fifteen unmounted and six mounted specimens of plants from Colorado and California. Gift.
- Hallowell, Mr. Harry E., San Francisco: Two cultivated plants for identification. Gift.
- Hanna, Dr. G. Dallas, California Academy of Sciences: Two hundred and sixty-one land shells from Point Reyes Peninsula, collected with Dr. Emmet Rixford; 2,448 specimens of land and freshwater shells from Southern California, collected in January, 1921; 110 land shells from Tuolumne County, 142 land shells from San Joaquin County, eight freshwater shells from Marin County, 363 land shells from Calaveras County. Exploration.
- One hundred and twenty-five specimens of fossil shells from St. Paul Island, Alaska; 940 specimens of fossil marine mollusks, corals, etc., from Imperial County; 44 casts of fossils from Imperial County, the originals of which are in other museums; 315 specimens of fossils from Austin, Texas, 10 shells from Alaska, one large quartz crystal from Mokelumne Hill, three botanical specimens from Imperial County, two specimens of White-footed Mice from Marin County, one lizard from Imperial County, one from Ventura County, and two lizards and two snakes from Marin County, 15 maps of the Pribilof Islands, Alaska, and sundry pamphlets. Gift.
- Hanna, Dr. G. Dallas and Mr. Marcus A.: Two hundred and forty-eight specimens of land and freshwater shells from southern California, collected in May and June, 1921; 68 sets of sundry bird eggs and nests, 20 bird skins, and two bat skins from Ventura County. Exploration.

- Hanna, Mr. Marcus A., Berkeley: Fifteen freshwater shells from Kansas, 11 specimens of freshwater mussels from Arkansas, and 166 land and freshwater shells from Calaveras County. Gift.
- Hart, Mr. Cecil, Los Angeles: Twenty-two specimens of plants from Los Angeles. Gift.
- Hawxhurst, Mr. Robert, San Francisco: Snake skin from near the Piz Piz River, Department of Cabo Gracias, Nicaragua; and sundry Academy publications. Gift.
- Hayden, Dr. Walton, Marshfield, Ore.: Three hundred and thirty-one botanical specimens from Oregon. Gift.
- Head, Miss Anna, Berkeley: Three hundred and fifty specimens of California plants. Gift.
- Heath, Dr. Harold, Stanford University: Three land shells from Santa Cruz County. Gift.
- Hercules Powder Co., Wilmington, Del.: Four pamphlets. Gift.
- Herrin, Mr. W. F., San Francisco: One botanical specimen from Shasta Springs; copy of Marquard's Flora of Guernsey and the Lesser Channel Islands. Gift.
- Holladay, Mr. E. B., San Francisco: Two old documents pertaining to the incorporation of the California Academy of Sciences; six copies of California Academy of Natural Sciences Circular, 1853. Gift.
- Holman, Mr. F. C., San Francisco: Five ornithological specimens, San Diego County. Gift.
- Hovey, Mrs. W. T., San Francisco: Twenty-five specimens of mollusks, birds' eggs, and sea urchins. Gift.
- Howe, Mr. Henry V., Berkeley: Sixty-four land and freshwater shells from Oregon, by gift; and sundry Academy publications by exchange.
- Howell, Mr. A. B., Pasadena: Twenty-eight specimens of land shells from Oregon, Idaho, and Montana. Gift.
- Hunt, Mrs. Clara, St. Helena: Thirty-seven specimens of California plants. Gift.
- Hunter, Mr. J. S.: One botanical specimen from Marin County. Gift.
- Israelsky, Mr. Merle, San Francisco: Two hundred and nine specimens of freshwater shells from Nevada. Gift.
- Johnston, Mrs. C. R., San Francisco: A miscellaneous collection as follows: 18 fossils, 20 corals, three starfishes, three sea urchins, 200 minerals, 300 marine shells. Gift.
- Johnston, Mr. Edward C., Washington, D. C.: Twenty-nine thousand six hundred and ninety-eight specimens of land and freshwater shells, representing 300 species, chiefly from the Mississippi Valley. Fifty-five specimens of fossil shells from St. George Island, Alaska. Gift.
- Jones, Mr. Vincent, San Francisco: Five botanical specimens from Sierra County. Gift.
- Kavanaugh, Officer James H., California Academy of Sciences: Two botanical specimens from California; six specimens of lava and obsidian from Clear Lake, California. Gift.
- Kellers, Dr., U. S. Navy: Forty-two land shells from Tutuila, Samoa. Gift.

- Kelly, Mrs. G. Earle, Alameda: Twenty specimens of slugs from Alameda; 42 botanical specimens from California. Gift.
- Kidder, Miss Caro, Berkeley: Skin of Bird of Paradise from New Guinea. Gift.
- Knoffe, E. S., Santa Catalina Island: One botanical specimen from Santa Catalina. Gift.
- Kusche, Mr. J. August, San Francisco: One hundred and seven botanical specimens from Needles; 30 specimens of plants from Solomon Islands; 36 specimens of lichens from the Island of Kauai, Hawaiian Islands, and 29 species of mosses from same locality; 200 land shells from Hawaii; and 22 specimens of land and freshwater shells from Shasta County. Gift.
- One thousand three hundred and sixty-seven marine shells, 310 land and freshwater shells, 14 corals, 25 crabs, two stone axes, 152 bird skins from Kauai, Hawaiian Islands, Australia, and Solomon Islands, 10 eggs of *Megapodius eremita* and 7 mammal skins from the Solomon Islands, and two mineral specimens from Guadalcanar Island, Solomon Islands. Purchase.
- Leach, Mr. Frank A., Piedmont: Five California botanical specimens. Gift.
- Levy, Mr. Henry: One book, Sketches of Creation, by Winchell. Gift.
- Lewis, Mr. W. C., Sausalito: One botanical specimen from Sausalito. Gift.
- Littlejohn, Mr. Chase, Redwood City: Seventeen land shells from San Mateo County; 256 marine shells from Half Moon Bay; sea urchin from Midway Island; 12 fossil shells from Lower California; 172 specimens of shells from San Francisco Bay, and one from Alaska. Gift.
- Mailliard, Mr. John W., San Francisco: One specimen of the Giant Owlet Moth, taken at Belvedere. Gift.
- Mailliard, Mr. Joseph, California Academy of Sciences: Seventy-four land and freshwater shells from Northern California; 122 land shells from Del Norte County; 20 specimens of freshwater shells from Sonoma County; 20 fossil shells from Del Norte County; and 549 land and freshwater shells from same locality, the last two items collected in company with Mr. Chase Littlejohn. Exploration.
- Marshall, Mr. Byron C., Imboden, Ark.: Six specimens of rocks from Arkansas. Gift.
- Martin, Mr. J. O., Berkeley: Sundry numbers of Contributions from the National Herbarium, and other publications. Gift.
- McCracken, Dr. Isabel, Stanford University: Twelve cases of oak-gall producing insects. Gift.
- McGanney, Mrs. D. C., San Francisco: Three specimens of California plants. Gift.
- McGrath, Capt. B., Mill Valley: Three eggs of *Pandion leucocephalus* (?) from the Solomon Islands. Gift.
- McLaren, Mr. John, Golden Gate Park: One Alaskan bear; one male kangaroo; five black swans, two adults, two juveniles, and one nestling, all from Golden Gate Park. Gift.

- McLean, Mr. T., Chico: Twenty-eight specimens of weeds from the rice fields near Chico. Gift.
- McLellan, Miss M. E., California Academy of Sciences: Collection from Samoa as follows: 47 bird skins; one flying fox; 866 specimens of land, freshwater and marine shells; two turtles; and 104 lizards. Gift.
- Meiere, Mrs. Ernest, Los Altos: Nine botanical specimens from Tulare County and Los Altos. Gift.
- Menzies, Mr. Robert, San Rafael: Three botanical specimens from San Rafael. Gift.
- Michaels, Mrs. Enid, Yosemite: Nineteen botanical specimens from Yosemite National Park. Gift.
- Moffitt, Mr. James, San Francisco: One specimen of Pacific Golden Plover from near Honolulu. Gift.
- Moxley, Mr. George L., Los Angeles: Three botanical specimens from Los Angeles. Gift.
- Murphy, Mr. Robert C., New York, N. Y.: One pair *Pelecanoides georgicus*. Purchase.
- Museum of Comparative Zoology, Cambridge, Mass.: Two lizards from Utah, 17 lizards from Lower California and adjacent islands, 78 specimens of reptiles from Africa and West Indies, 52 specimens of reptiles and amphibians from Solomon Islands, East Indies, and Africa. Exchange.
- Naturhistorisches Museum, Basel, Switzerland: One frog, two snakes, four lizards and one salamander from New Caledonia, New Guinea, and Syria. Exchange.
- Nelson, Mr. E. W., Washington, D. C.: Sixty-eight books and pamphlets. Gift.
- New York Botanical Garden, New York, N. Y.: Seven hundred and forty-seven botanical specimens; 225 specimens of lichens chiefly duplicates from the Underwood Herbarium. Gift.
- Norton, Mr. A., Salinas: One botanical specimen from Salinas. Gift.
- O'Connor, Miss Mary, San Rafael: Twenty-four botanical specimens from Fresno and Eureka. Gift.
- Osterhoudt, Mr. E. G., San Francisco: Five frogs from Eureka. Gift.
- Owen, Mr. Virgil W., San Diego: Five hundred and seventy-one land and freshwater shells from the Chiricahua Mountains of Arizona. Gift.
- Pack, Mr. Herbert J., Logan, Utah: One snake and one lizard from Utah. Exchange.
- Packard, Dr. Earl L., Eugene, Ore.: Ten plaster casts of type specimens of fossil mollusks. Gift.
- Parish, Mr. Herbert, Toronto, Canada: One thousand four hundred and ninety-two beetles from Brazil and Peru. Purchase.
- Payson, Mr. Edwin, St. Louis, Mo.: Five hundred and sixty botanical specimens from Idaho. Purchase.
- Peers, Miss Susie, San Francisco: One fox squirrel in flesh from Golden Gate Park; and Science, volume for 1921. Gift.



- Penny, Mr. D. D., Watsonville, through Mr. E. O. Essig: Twelve slides of Aleurodidæ. Gift.
- Philippine Bureau of Science, through Dr. Roy E. Dickerson, Manila, P. I.: Nine hundred and eighty-eight land, freshwater and marine shells from the Philippine Islands. Gift.
- Pomeroy, Mr. C. S., Riverside: One specimen of *Tagetes minuta* L., a weed reported in the United States for the first time. Gift.
- Queensland Geological Survey, Brisbane, Queensland: Eight maps of Queensland, Australia. Gift.
- Ran, Mr. Venkata: One specimen of California plant. Gift.
- Ray, Mr. Milton S., San Francisco: Two Moro baskets and one grass skirt. Gift.
- Reed, Mr. C. A., Santa Cruz: Four botanical specimens from the Big Basin. Gift.
- Rigg, Mr. George B.: One botanical specimen from Oregon. Gift.
- Rixford, Mr. G. P., San Francisco: Fourteen botanical specimens, chiefly from San Antonio, Texas. Gift.
- Rixford, Dr. Emmet, San Francisco: Two botanical specimens from Tulare County. Gift.
- Robinson, Mr. Ansel, San Francisco: One snake. Gift.
- Robinson, A. W. & Co., San Francisco: One adult orang-utan in flesh from Borneo (?). Gift.
- Rose, Mr. Alex.: Seven botanical specimens from California. Gift.
- Ruble, Mr. Russel, Geddes, So. Dak.: Nine sets of birds' eggs from Geddes, So. Dak. Gift.
- Ryan, Mr. Clarence, University of California: One fossil land shell from Asphalt Pit of Rancho La Brea, near Los Angeles. Gift.
- San Diego Society of Natural History, San Diego: Two lizards from San Luis Obispo County. Exchange.
- Scudder, Mr. R. W., San Diego: Two botanical specimens from San Diego. Gift.
- Scupham, Major J., San Francisco: Two botanical specimens from Carmel. Gift.
- Sellmer, Mr. Walter B., San Anselmo: One botanical specimen from Marin County. Gift.
- Shepard, Mr. Vernon, San Rafael: Skull of black bear. Exchange.  
Specimen of the Farallon Rail (*Porzana coturniculus*). Gift.
- Shortridge, Senator Samuel M., San Francisco: Congressional Directory. Gift.
- Simmons, Mr. L. S., Sonoma: One botanical specimen from Sonoma County. Gift.
- Slevin, Mr. L., Carmel: Six photographs of Cactaceæ from Arizona. Gift.
- Slonaker, Dr. J. R., Stanford University: Two snakes from Wisconsin, 190 study skins of birds and 197 sets of birds' eggs, chiefly from Indiana and Wisconsin. Gift.
- Small, Mr. E. C., Berkeley: Two specimens of Mariposite from Finnegan Mine, Carson Hill, Calaveras County. Gift.

- Smith, Mr. Charles Piper, San Jose: Four hundred and fourteen botanical specimens from East and middle West. Gift.
- Smithsonian Institution, Washington, D. C.: Ten pamphlets. Gift.
- Soares, Mr. Antone J., Hayward: Eight botanical specimens from California. Gift.
- Stanford University: One specimen of marine shell from Panama. Exchange.
- Stephens, Dr. W. B., Alameda: One box of freshwater diatoms from Shasta County. Gift.
- Stevens, Mr. Frank, San Diego: One lizard from Coronado Islands. Gift.
- Stevens, Mr. Neville, University of California: One botanical specimen from Los Angeles. Gift.
- Stewart, Mr. H. W., Emmett, Idaho: Fourteen freshwater shells from Lower Klamath Lake, Ore., and 11 marine shells from St. Paul Island, Alaska. Gift.
- Sumner, Dr. F. B., La Jolla: One botanical specimen from San Diego County. Gift.
- Sumner, Mr. P. W., San Diego: Six specimens of California plants. Gift.
- Sutcliffe, Mrs. E. C., San Francisco: Seventy-six botanical specimens from California localities, 61 specimens and species of Hepatics. Gift.
- Tableman, Mr. Fred S., Newark, N. J.: Six vials of fossil diatoms. Exchange.
- Tanner, Prof. V. M., St. George, Utah: Eight snakes and two lizards from Utah. Gift.
- Taylor, Dr. Walter P., La Jolla: One hundred and eighteen botanical specimens from the Olympic Mountains, and eight from San Diego County. Gift.
- Turner, Miss Laura A. L., Riverside: One botanical specimen from Riverside. Gift.
- Udden, Dr. L. S., Austin, Texas: Fourteen land and brackish-water shells from Texas. Gift.
- University of California, Berkeley: Four land shells from Oregon and Washington. Exchange.
- Three fossil land shells from Shasta County. Gift.
- University of Colorado, Boulder, Colo.: One hundred and fourteen specimens of fossils from the Rocky Mountain region, 377 specimens of land and freshwater shells, same locality. Exchange.
- University of Michigan, Ann Arbor, Mich.: Forty-four specimens of reptiles and amphibians from Central and South America. Exchange.
- University of Utah, Salt Lake City, Utah: One lizard from Nevada. Exchange.
- Upton and Bymes, Corcoran: Fifteen specimens of freshwater shells from Tulare Lake; one vertebra and one tooth of mammal from Tulare Lake fossil beds. Gift.

- U. S. Bureau of Fisheries and U. S. National Museum, through Dr. F. H. Moore, Washington, D. C.: Forty sponges for exhibition purposes. Gift.
- U. S. Coast Guard, Washington, D. C.: Annual report, 1915. Gift.
- U. S. National Herbarium, Washington, D. C.: One thousand four hundred miscellaneous duplicates, and 21 specimens of plants. Exchange.
- Van Denburgh, Dr. John, California Academy of Sciences: One botanical specimen from San Benito County. Gift.
- Van Duzee, Mr. E. P., California Academy of Sciences: Thirteen thousand and seventy-three specimens of insects taken on Academy Expedition to the Islands of the Gulf of California, April 2 to July 8, 1921. Exploration.  
One hundred and thirty specimens of marine shells from San Francisco Bay. Gift.
- Van Dyke, Dr. E. C., Berkeley: One thousand three hundred and forty-eight specimens of insects from Yosemite Valley, three salamanders, three lizards, and one snake from Yosemite Valley, one botanical specimen from Bakersfield. Gift.
- Van Wyck, Mr. Sidney M., Jr., San Francisco: One pamphlet. Gift.
- Walther, Mr. Eric, San Francisco: Three hundred and sixty-five botanical specimens from Golden Gate Park, 267 from southern California, and 75 from Marin County. Gift.
- Walter, Miss Henrietta, San Diego: Forty-two botanical specimens from the Alps. Gift.
- Wicks, Miss Ethel, San Francisco: One botanical specimen from California. Gift.
- Wilkins, Mrs. Johanna E., California Academy of Sciences: One botanical specimen from Golden Gate Park. Gift.
- Willett, Mr. George, Wrangell, Alaska: Eight sets of birds' eggs and one nest from Alaska. Exchange.
- Williams, Mr. Robert S., New York, N. Y.: Fifty specimens of Montana mosses. Gift.
- Wilson, Mrs. Arno H., Atlas: One botanical specimen from Napa County. Gift.
- Wolley-Dod, Col. A. W., London, England: Twenty-eight botanical specimens from California localities. Gift.
- Woodrum, Mr. J. H., San Francisco: Two specimens of native copper ore in quartz from Calumet and Hecla Mine, Michigan. Gift.
- Wright, Miss Alice B., San Francisco: One botanical specimen from El Dorado County. Gift.
- Wright, Mr. A. H., Ithaca, N. Y.: Six salamanders from New York. Exchange.
- Wright, Mr. W. G., San Diego: Four skins of small rodents from Alaska and Washington. Gift.
- Zetek, Mr. James, Ancon, Canal Zone: Three hundred shells from the vicinity of the Isthmus of Panama. Exchange.

**FINANCIAL STATEMENTS****REPORT OF THE TREASURER**

for the fiscal year ending March 31, 1922.

April 1, 1921, Balance due Crocker National Bank \$2,756.62

*Receipts*

Dues .....	\$ 3,708.31	
Charles Crocker Scientific Fund Endowment In- come .....	1,290.48	
James Lick Endowment Income.....	51,935.47	
General Income .....	17,880.70	
John W. Hendrie Endowment Income.....	900.00	
U. S. Treasury Certificates .....	16,000.00	
Interest .....	799.14	
U. S. Treasury Certificates, Steinhart Trust.....	28,000.00	
Ignatz Steinhart Trust Interest.....	18,721.83	
Museum .....	158.41	
Publication .....	154.23	
Library .....	33.50	
W. G. Wright Fund.....	77.00	
Sundry Advances .....	185.07	
Yosemite Game Paddocks Donations .....	350.00	
John C. Augsbury Donation .....	100.00	
A. F. Morrison Donation .....	200.00	
William F. Herrin Donation .....	200.00	
William H. Crocker Donation .....	200.00	
Antelope Fund Donation .....	335.00	
Contingent Fund .....	5.00	
Post Card Sales .....	1,398.60	
		<hr/>
		\$142,632.74
		<hr/>
		\$139,876.12



REPORT OF THE TREASURER—*Continued**Expenditures*

Expense .....	\$ 2,328.72	
Salary Expense (General) .....	18,073.28	
Bills Payable .....	10,000.00	
Insurance .....	1,255.64	
Interest .....	16,921.58	
Museum, Department Appropriations .....	4,770.73	
Museum, Department Salaries .....	12,327.76	
Library .....	2,267.64	
Publication .....	6,814.85	
Tools and Equipment .....	243.20	
U. S. Treasury Certificates .....	18,000.00	
U. S. Treasury Certificates, Steinhart Trust .....	27,000.00	
Ignatz Steinhart Trust Interest .....	52.20	
Steinhart Aquarium Construction .....	13,146.79	
Yosemite Game Paddocks .....	200.61	
Grizzly Bear Group .....	3,236.74	
Antelope Fund .....	149.05	
W. G. Wright Fund .....	.28	
Post Card Sales .....	9.50	
Prager Herbarium .....	1,110.50	
Gulf of California Expedition .....	3,010.94	
Sundry Creditors .....	894.32	
Sundry Advances (Museum) .....	268.08	
Contingent Fund .....	387.66	
		\$142,470.07
March 31, 1922, Balance due Crocker National Bank		\$ 2,593.95

M. HALL McALLISTER, *Treasurer.*

Examined and found correct,

McLAREN, GOODE & Co., *Certified Public Accountants.*

San Francisco, Calif., April 21, 1922.

## INCOME AND OPERATING EXPENSES

For the Period April 1, 1921, to March 31, 1922.

*Income:*

Charles Crocker Scientific Fund Endowment	
Income .....	\$ 1,290.48
James Lick Endowment Income .....	51,935.47
General Income .....	17,880.70
Dues .....	3,713.31

*Expenditures:*

General Expense .....	\$ 2,776.57	
Salaries .....	30,401.04	
Interest .....	16,046.61	
Insurance .....	1,255.64	
Balance to Surplus Account.....	24,340.10	
	<hr/>	
	\$74,819.96	\$74,819.96

## SUMMARY OF SURPLUS ACCOUNT

March 31, 1922

Balance March 31, 1921.....		\$348,378.77
Add Excess of Income over Operating Expenses. \$24,340.10		
Library Account, Purchases from W. G.		
Wright Fund in 1921-22.....	76.72	
Post Card Sales .....	591.96	
Donations:		
Yosemite Game Paddocks .....	350.00	
Antelope Fund .....	335.00	
William M. Fitzhugh .....	200.00	
John C. Augsbury .....	100.00	
A. F. Morrison .....	200.00	
William F. Herrin .....	200.00	
S. Levi .....	103.60	
	<hr/>	26,497.38
		<hr/>
		\$374,876.15
Less Yosemite Game Paddocks .....	\$ 350.00	
Antelope Fund .....	335.00	
Depreciation .....	14,922.81	
	<hr/>	15,607.81
		<hr/>
		\$359,268.34

## IGNATZ STEINHART TRUST

March 31, 1922

Bequest from the Ignatz Steinhart Estate.....	\$250,000.00
Interest on temporary investments.....	40,556.24
	<hr/>
	\$290,556.24

## Investments :

Steinhart Aquarium Construction .....	\$ 16,067.71
Steinhart Aquarium Equipment .....	78.29
Temporary investments:	
Bills Receivable .....	250,000.00
U. S. Treasury Certificates .....	24,000.00
Balance receipts over investments.....	410.24
	<hr/>
	\$290,556.24

## BALANCE SHEET

March 31, 1922

**Assets**

## Real Estate:

Market Street Lot .....	\$600,000.00	
Jessie Street Lot .....	8,083.65	
Commercial Building .....	516,818.66	
		<hr/> \$1,124,902.31

## Stocks:

60 shares Savings Union Branch of the Mer-		
cantile Trust Co. ....		13,600.00

## Ignatz Steinhart Trust:

Bills Receivable .....	250,000.00	
U. S. Treasury Certificates .....	24,000.00	
Steinhart Aquarium Construction .....	16,146.00	
Receipts in excess of investments.....	410.24	
		<hr/> 290,556.24

U. S. Treasury Certificates .....	10,000.00
Museum Construction .....	192,025.92

## Museum:

General Collections .....	118,307.00	
Tools and Equipment .....	25,109.95	
		<hr/> 143,416.95

## Library:

Publications .....	32,372.27	
Books and Equipment .....	23,139.63	
		<hr/> 55,511.90

Office Furniture .....	3,343.44
Foreign Exchange .....	71.90

## Sundry Advances:

Prager Herbarium .....	146.53	
Yosemite Game Paddocks .....	186.11	
		<hr/> 332.64

Post Cards in Stock .....	2,468.82
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\$ 1,836,230.12



**BALANCE SHEET—Continued***Liabilities*

## Endowments:

James Lick Endowment .....	804,902.31	
Charles Crocker Scientific Fund Endowment..	20,000.00	
John W. Hendrie Endowment .....	13,600.00	
		\$838,502.31
Ignatz Steinhart Trust .....	250,000.00	
Ignatz Steinhart Trust Interest Account .....	40,556.24	
		290,556.24
Alvord Bequest Botanical .....		5,000.00
John W. Hendrie Income Account.....		900.00
A. K. Macomber Donation .....		3,500.00
William C. Van Antwerp Donation.....		5,120.00
William H. Crocker Donation.....		3,768.73
W. B. Bourn Donation.....		2,659.31
J. D. Grant Donation .....		2,710.42
Herbert Fleishhacker Donation .....		3,500.00
Ogden Mills Donation .....		5,000.00
John W. Mailliard Donation .....		1,250.00
Bills Payable .....		280,000.00
Antelope Fund .....		185.31
Sundry Creditors .....		1,568.09

## Cash:

Amount due Ignatz Steinhart Trust.....	410.24	
Overdraft with Crocker National Bank.....	2,593.95	
		\$3,004.19
Less Cash in Safe.....	71.51	2,932.68
Depreciation .....		29,808.69
Surplus .....		359,268.34
		\$1,836,230.12

W. W. SARGEANT,  
Secretary, Board of Trustees.

We have examined the foregoing Balance Sheet, together with the books and accounts of the CALIFORNIA ACADEMY OF SCIENCES, and, in our opinion, it is properly drawn up so as to exhibit a true and correct view of the Academy's affairs, as shown by the books.

McLAREN, GOODE & Co.,  
Certified Public Accountants.

San Francisco, Calif.,  
April 21, 1922.

# PROCEEDINGS

## Fourth Series

### VOLUME X

Pages 1-27. I. A Further Study of Variation in the Gopher-Snakes of Western North America. By John Van Denburgh. Plates 1-2.	
Pages 29-30. II. Description of a New Species of Rattlesnake ( <i>Crotalus lucasensis</i> ) from Lower California. By John Van Denburgh. Plate 3.	
Pages 31-32. III. Description of a New Subspecies of Boa ( <i>Charina bottæ utahensis</i> ) from Utah. By John Van Denburgh.	
Pages 33-34. IV. Description of a New Lizard ( <i>Dipsosaurus dorsalis lucasensis</i> ) from Lower California. By John Van Denburgh. ( <i>Issued August 4, 1920</i> ) Price for the four papers.....	\$1.00
Pages 35-46. V. Undescribed Tipulidæ (Diptera) from Western North America. By Charles P. Alexander.	
Pages 47-49. VI. Three New Species of Dolichopodidæ (Diptera) from California and Nevada. By M. C. Van Duzee.	
Pages 51-52. VII. Two New Species of Syrphidæ (Diptera). By A. L. Lovett. ( <i>Issued August 4, 1920</i> ) Price for the three papers	.50
Pages 53-70. VIII. Notes on some Undescribed Californian Helices. By S. Stillman Berry. Plates 4-6. ( <i>Issued August 11, 1920</i> )...	.50
Pages 71-75. IX. A New Genus and Species of Grasshopper from California. By Morgan Hebard. 1 text figure. ( <i>Issued December 29, 1920</i> ).....	.30
Pages 77-117. X. Color Changes and Structure of the Skin of <i>Anolis carolinensis</i> . By Charles E. von Geldern. Plates 7-9. ( <i>Issued February 12, 1921</i> ).....	1.50
Pages 119-163. XI. Report of the President of the Academy for the year 1920.	
XII. Report of the Director of the Museum for the year 1920. ( <i>Issued July 2, 1921</i> ) .....	.50

### VOLUME XI

Pages 1-26. I. Notes on a Fauna of the Vigo Group and its Bearing on the Evolution of Marine Molluscan Faunas. By Roy E. Dickerson. ( <i>Issued July 6, 1921</i> ) .....	.50
Pages 27-72. II. A List of the Amphibians and Reptiles of Nevada, with Notes on the Species in the Collection of the Academy.	
III. A List of the Amphibians and Reptiles of Idaho, with Notes on the Species in the Collection of the Academy.	
IV. A List of the Amphibians and Reptiles of the Peninsula of Lower California, with Notes on the Species in the Collection of the Academy. By John Van Denburgh and Joseph R. Slevin ( <i>Issued July 8, 1921</i> ).....	.75
Pages 73-94. V. Notes on the Birds and Mammals of Siskiyou County, California. By Joseph Mailliard. ( <i>Issued July 11, 1921</i> )	.50
Pages 95-98. VI. Preliminary Diagnosis of New Species of Reptiles from Islands in the Gulf of California, Mexico. By John Van Denburgh and Joseph R. Slevin. ( <i>Issued July 30, 1921</i> ).....	.10
Pages 99-102. VII. New Californian Spiders. By Nathan Banks. ( <i>Issued September 29, 1921</i> ).....	.10
Pages 103-108. VIII. Undescribed Tipulidæ (Diptera) from Western North America, Part II. By Charles P. Alexander. ( <i>Issued September 29, 1921</i> ).....	.15
Pages 109-110. IX. Description of a New Species of <i>Pero</i> from California. By W. S. Wright. ( <i>Issued September 29, 1921</i> )....	.10
Pages 111-134. X. Characters of some New Species of North American Hemipterous Insects, with one New Genus. By Edward P. Van Duzee. ( <i>Issued October 15, 1921</i> )	
Pages 135-136. XI. Our North American Species of <i>Strongylocoris</i> (Hemiptera). By Edward P. Van Duzee. ( <i>Issued October 15, 1921</i> )	
Pages 137-144. XII. Characters of Eight New Species of North American Anthocoridæ or Flower Bugs. By Edward P. Van Duzee. ( <i>Issued October 15, 1921</i> )	
Pages 145-152. XIII. A Study of North American Grass-bugs of the Genus <i>Irbisia</i> . By Edward P. Van Duzee. ( <i>Issued October 15, 1921</i> ) Price for the four papers.....	.50



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## Fourth Series

### VOLUME XI—Continued

Pages 153-196.	XIV. Insects of the Pribilof Islands, Alaska. Introduction by G. Dallas Hanna. Coleoptera by Edwin C. Van Dyke. Hydrophorus fumipennis by M. C. Van Duzee. Diptera (General Report) by F. R. Cole. Anthomyiidae by J. R. Malloch. Tipulidae by C. P. Alexander. Hymenoptera (Bremidae) by Theodore H. Frison. Hymenoptera (Saw-flies) by Alexander D. MacGillivray. Orthoptera, Neuroptera, Hemiptera and Lepidoptera by E. P. Van Duzee. (Issued November 2, 1921).....	\$0.50
Pages 197-344.	XV. An Annotated List of the Diptera (Flies) of Oregon. By F. R. Cole and A. L. Lovett. (Issued December 14, 1921).....	1.00
Pages 345-394.	XVI. Revision of the Pipiza Group of the Family Syrphidae (Flower-flies) from North of Mexico. By C. Howard Curran. (Issued December 31, 1921).....	.60
Pages 395-398.	XVII. Preliminary Diagnosis of More New Species of Reptiles from Islands in the Gulf of California, Mexico. By John Van Denburgh and Joseph R. Slevin. (Issued December 17, 1921).....	.10
Pages 399-526.	XVIII. Fossil Chitons of Western North America. By S. Stillman Berry. (Issued May 16, 1922).....	1.50
Pages 527-601.	XIX. Tertiary and Quaternary History of the Petaluma, Point Reyes and Santa Rosa Quadrangles. By Roy E. Dickerson. (Issued July 10, 1922) .....	1.50

The Academy cannot supply any of its publications issued before the year 1907, its entire reserve stock having been destroyed in the conflagration of April, 1906. Any of the papers of the Fourth Series, including those in Vols. I to VII, as well as those in the above list, can be supplied.